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A COMPARISON OF EPPS AND TAT NEED FOR ACHIEVEMENT SCORES AND ACADEMIC SUCCESS

by

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled A Comparison of EPPS and TAT Need for Achievement Scores and Academic Success, submitted by Merlin Walter Wahlstrom in partial fulfillment of the requirements for the degree of Master of Education.

ABSTRACT

This thesis was designed to investigate the relationship between the McClelland TAT-fantasy method and Edwards Personal Preference Schedule need for achievement scores. Since several studies have been reported where the calculated correlations between the two sets of scores are nonsignificant, the next logical step is to investigate systematic differences for various subgroups of a sample.

It was suggested that these instruments measure different types of need for achievement. The EPPS was assumed to be a measure of social need for achievement which was designated as v Achievement (value for achievement). Characteristic of persons with high v Achievement scores is that they are more responsive to authoritative opinions as to what constitutes correctness or success and are more conformist. Personal need for achievement, as measured by the TAT, remained as n Achievement (need for achievement). Attributes of persons high on the n Achievement scale is that they tend to be individualistic, unwilling to be pressured into conformity, and are inner-oriented or self-oriented.

It was concluded that the Alberta value system is, in large part, academically oriented whereas Americans emphasize predominantly nonintellectual tasks. Thus, different environmental expectations are involved, especially for students, in Alberta and the United States.

An analysis of achievement motivation scores, for males and females, with subgroups classified according to above average ability, below average ability, overachievement, underachievement, and various

combinations of the major classifications into, for example overachieving below average ability students, was carried out.

There was a general agreement between previous research and the results of this study for sex differences and unrelatedness of EPPS and TAT need for achievement scores. The reconciliation of the nonsignificant correlation between the two sets of scores was explained in terms of the susceptibility of the two tests to social desirability. The TAT, it was concluded, will predict need for achievement when personal needs are dominant. The EPPS, in contrast to the TAT, will predict need for achievement to the extent that social pressures rather than personal needs are paramount.

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CHAPTER I

INTRODUCTION TO THE PROBLEM

Among the personality theories that have stimulated test development, one of the most prolific has been the manifest need system proposed by H. A. Murray and his associates at the Harvard Psychological Clinic. Murray conceived of personality as a hypothetical structure that governs the experience and patterns of action of the individual. The term that Murray utilized to deal with motivational processes was need. "Need is a construct which stands for a force in the brain region. This force organizes action, intellection, perception, and other cognitive processes toward the satisfaction of that need. It manifests itself by leading the organism to search for or to avoid relevant environmental circumstances. It is the driving and directing force in human behavior" (Murray, 1938, pp. 123-124). The Thematic Apperception Test (TAT) was designed by H. A. Murray and C. D. Morgan for the investigation of needs.

Murray's theory and technique are the source for investigations of the achievement motive. Need for achievement is conceived to be an elementary ego need which may prompt action by itself or when it is fused with any other need. McClelland, Atkinson, Clark, and Lowell (1953) claim they have provided a practical method of measuring the achievement motive, one of the most important motives from the educational point of view.

Most of McClelland's research used four pictures designated B,

H, A, and G. A and G are cards 7BM and 8BM of Murray's TAT series, the other two were prepared specifically to measure need for achievement. The pictures are projected on a screen before the subjects for 20 seconds. Stories are written on paper in answer to four questions, adapted from Murray, intended to insure complete coverage of the plot.

Following a different path, but also taking the same starting point in using the manifest need system, Edwards developed the Edwards Personal Preference Schedule (EPPS) which is the most comprehensive inventory designed to assess the strength of such needs.

The EPPS has been used widely in both the applied and research fields as a means of measuring 15 normal personality variables. The test consists of 225 items, each of which contains two alternative statements from which the subject is supposed to choose the one more clearly characterizing himself. The statements are supposed to be equal in social desirability. From the 225 items, 28 are scored for the achievement scale.

"Performance or production measurements involve an additional function, that of the will to work (motivation) in accordance with the amount of ability possessed" (Maier, 1955, p. 417). That motivation, in addition to ability, affects performance is further documented by Cronbach and Gleser, 1957, p. 7; Hilgard, 1956, p. 469; Tyler, 1961, pp. 268-269. Since research on intellectual factors predicting academic achievement appears to have reached a plateau, a number of investigators have turned to the relation between a non-intellectual factor, namely need for achievement, and academic achievement (Gebhart and Hoyt, 1958, McClelland *et al*. 1953; Morgan,

1952). Although there is evidence to suggest that (a) not having developed study skills (Danskin and Burnett, 1952) (b) inability to achieve the perfection demanded of themselves or others (Atkinson, 1958, pp. 322-339), (c) disinterest in academic matters (Coleman, 1959, and Remmers and Radler, 1957), and (d) lack of challenge in the educational program because of unusual ability (Jersild, 1963, p. 136-137) may partially, in various combinations, account for the discrepancy between the prediction made by a test of intellectual ability and actual achievement, it is postulated that a study of the relationship between this discrepancy and need for achievement will result in further clarification. A single factor explanation is not intended. The study is limited to a manageable area of investigation in which only one of the many reasons for discrepancy in achievement is postulated.

Because underachievement and overachievement have been used as dependent variables in previous studies of achievement, they provided the basis for the present study. The assumption is made that such groups represent extremes in which a nonintellectual influence will have the maximum opportunity to show itself.

Although the tests were originally developed on a population of college students, McClelland and Edwards claim that the methods and instruments are also valid for measuring need for achievement when used with a high school sample.

It has been postulated that the McClelland TAT-fantasy method and the EPPS both measure need for achievement but the reported absence of any relationship between the two indicates that these

instruments are not equivalent. Is this a function of the theoretical basis of the tests; may it be attributed to different personality characteristics; or is it a function of the type of instrument used to measure the achievement motive? Because the two instruments have been, in large part, developed from the same general theory, one would conclude that the second and third explanations would be more likely to resolve the apparent paradox.

Edwards postulates that a social desirability effect is present in a person's responses on a personality scale which appears to be more relevant than the notion of a response set. One investigator was able to attribute twenty six per cent of the total variance to probability of endorsement of an item in terms of the social desirability scale differences of the statements on the EPPS for a high school sample (Klett, 1957a). Since social desirability is considered to play a prominent role in the selection of alternate choices by examinees, it is postulated that the lack of relationship between the TAT-fantasy method and EPPS scores may be partially explained by introducing the concept of social desirability.

Results from studies using male and female groups separately have repeatedly been different for each sex, when analyzed with sex as a dependent variable, indicating that one should consider these as separate samples. Academic achievement motivation of females and males, it is suggested, differ in that females are more oriented toward reactions from others, i.e. social situations, while the behavior of males may be more autonomously determined by their own internal standards of achievement.

Grade eleven students were used as subjects in the present study. A high school rather than a university sample was selected because of the assumed greater heterogeneity. Thus, when stating the findings in this study, a broader generalization of results and implications should be permissible.

It has been shown by Downey (1960) that there is considerable regional variation within the United States and Canada as to what is considered, by the educators and the general public, to be the tasks of the public school. The Alberta School System incorporates more emphasis on academic achievement values than any area of the United States. This may provide a reasonable explanation as to why results on the TAT-fantasy method and the EPPS differ from study to study, especially when studies are carried out in different educational systems.

Although several studies (Bendig, 1957; Melikan, 1958; Marlowe, 1959; Shaw, 1961) have reported nonsignificant correlations between the TAT-fantasy method and EPPS, the writer is here attempting the next logical step in the study of need for achievement. The problem investigated in this study is: Why is there a nonsignificant correlation between two instruments which purport to measure the same hypothetical construct, namely need for achievement? The reconciliation of these different findings is explained in terms of the susceptibility of the two tests to social desirability. The TAT will predict need for achievement when personal needs are dominant. The EPPS will predict need for achievement to the extent that social pressures rather than personal needs are paramount.

CHAPTER II

McCLELLAND AND EDWARDS TESTS OF N ACHIEVEMENT

Thematic Apperception Test of n Achievement

McClelland's Theory Applied to the Achievement Motive. McClelland, Atkinson, Clark, and Lowell (1953) define a motive as: "A motive is the redintegration by a cue of a change in an affective situation". The word redintegration in this definition is meant to imply previous learning. In this system, all motives are learned. The basic idea outlined by McClelland *et al*. is as follows:

> Certain stimuli or situations involving descrepancies between expectation (adaption level) and perception are sources of primary, unlearned affect, either positive or negative in nature. Cues which are paired with these affective states, and the conditions producing them become capable of redintegrating a state (A') derived from the original affective situation (A), but not identical with it (McClelland *et al*., 1953, p. 28).

The redintegrated states might be called appetite and anxiety which are based on the primary affective situation but are not identical with it. There is some ambiguity as to whether the affective state, change in affective state, the conditions which produced the affective state, or all conditions are redintegrated. The most likely possibility is that both the situation and the affect it produces are redintegrated.

The basic propositions underlying this work came from (a) psychonalysis and from projective measurement generally; it holds that motivation may have effects on fantasy (cf. Murray, 1938), and (b) work on animal motivation which shows that motives can be

aroused by suitable conditions and that degree of arousal can be varied by altering the conditions of arousal.

Murray's definition of need is as follows:

> A need is a construct (a convenient fiction or hypothetical concept) which stands for force (the physico-chemical nature of which is unknown) in the brain region, a force which organizes perception, intellection, conation, and action in such a way as to transform in a certain direction an existing unsatisfying situation (Murray, 1938, pp. 123-124).

According to McClelland *et al*. (1953) the appearance of need for achievement (n Achievement) fantasy in a thematic story is a joint function of three variables: (a) cues in the everyday environment and in the relatively autonomous thought processes of the individual, (b) specific experimentally introduced cues, and (c) controllable cues in a particular picture. The person and his earlier experiences constitute one factor, the experimental setting another, and the stimulus - pull of the picture the third. The pictorial and background cues eliciting the n Achievement are controlled when following McClelland's procedure of using a standard set of pictures given under neutral instructions. Variation in strength of manifestation of the n Achievement motive in the thematic productions are then held to be a result of, the first variable, individual differences in motive strength. Responses to the pictures, it is assumed, are representative of the individual's behavior in similar real-life situations. The crucial point of McClelland's approach is that if achievement imagery is present in the thematic story one may safely conclude that the subject is motivated to achieve rather than engaging in wish-fulfilling fantasy.

The definition of n Achievement given by Murray (1943) in the *Thematic Apperception Test Manual* is as follows:

> n Achievement. To work at something important with energy and persistence. To strive to accomplish something creditable. To get ahead in business, to persuade or lead a group, to create something. Ambition manifested in action (Murray, 1943, p. 9).

Although critics (Atkinson, 1958, pp. 322-329; Bendig, 1959; Mitchell, 1961; Moss and Kagen, 1961) of McClelland's theory argue over the assumption that when n Achievement occurs it is an indication of aroused achievement motivation which will manifest itself in behavior and there is some doubt as to whether or not need states are necessarily expressed in fantasy (Feshbach, 1961), McClelland *et al.* (1953) contend that the theory and technique for measuring n Achievement are valid.

The terminology of motivation theories vary, but whether one speaks of a motive, drive, need, impulse, id, wish, or want, there is a common implication of the existence of a force of some degree of intensity activating or arousing behavior. The object of this force defines its direction and determines how one will label it.

Because of the familiarity of the term TAT, it will be used in this study as a shorthand way of referring to the method of sampling fantasy developed by Murray and used by McClelland and his associates.

Reliability. Two kinds of reliability must be considered in dealing with this kind of projective measurement. The first arises from the fact that the protocols obtained from the subjects must be scored in terms of the scoring system by judges or scorers. Good interjudge scoring has been reported, even when one judge had

relatively little experience with the scoring system. Scores provided by two judges were intercorrelated at .95. Rescoring by the same judge six months later yielded comparable results. Scores provided by inexperienced judges correlated well with those assigned by experienced judges (McClelland *et al*., 1953, pp. 185-187). A review of published research by Feld and Smith (Atkinson, 1958, p. 234) of researchers using the system of content analysis revealed interjudge scoring reliabilities of .66, .89, .95, .89, .91, .80, .96, and .82. A reliability value of 95% agreement was reported by Kagen and Moss (1959) and Veroff, Atkinson, Feld, and Guria reported a rho of .83. Feld and Smith also report score-rescore reliabilities of .95, .93, .95, .88, and .94.

Gulliksen (1950) suggests that interscorer reliability be at least .90 and he doubts that a test can be of much value when the coefficient falls below .80. McClelland and his associates have reached the .90. criterion for n Achievement.

Scoring manuals and examples are provided by McClelland *et al*. (1953) and by Atkinson (1958).

The second kind of reliability refers to the consistency of n Achievement scores obtained from the same subject at different points in time. One estimate of reliability reported was determined from two sets of three pictures each, administered at the same time. The correlation coefficient was .64 (corrected .78) (McClelland *et al*., 1953, pp. 190-191). However, the correlation between scores obtained from the two sets of pictures given a week apart was only an insignificant .22 (McClelland *et al*., 1953, p. 192). Nevertheless,

the two forms agreed in 72.5% of the cases in placing subjects above or below the medians in the score distributions. Krumboltz and Farquhar (1957) have reported a test-retest reliability coefficient over a nine week period of only .26. Haber and Alpert (Atkinson, 1958, p. 661) have reported a test-retest reliability of .54 (corrected to .70) over a three week interval. Although the reported reliability coefficient values question the stability of n Achievement scores for an individual, indirect evidence of reliability comes from findings that n Achievement scores are related to other behaviors (McClelland _et_ _al_., 1953). This suggests though it does not prove that n Achievement is a fairly stable characteristic.

Validity. The central problem of validity is whether McClelland's instrument provides a measurement of n Achievement. McClelland _et_ _al_. (1953) attempted to vary the arousal of achievement motivation by (a) the instructions subjects were given, (b) the tasks that they were asked to perform, and (c) the experiences of sucess or failure on these tasks induced by manipulating announced norms. The experimental procedure was aimed at gaining control of situational cues which would elicit n Achievement.

Relaxed, neutral, and achievement-oriented conditions were established by the type of instructions given to each group of subjects. It was hypothesized that the intensity of n Achievement aroused would be low for the relaxed group, high for the achievement-oriented group, and midway along an n Achievement intensity continuum for the neutral group. Research evidence presented by McClelland _et_

al. (1953) confirmed their hypotheses. When conditions in which feelings of success, i.e. motivation to succeed, or failure, i.e. motivation to avoid failure, were induced, it was assumed that the same high level of motivation as the achievement-oriented group would be demonstrated. This was also verified.

McClelland et al. (1953) concluded that the method of obtaining an n Achievement score is valid when applied to experimentally induced changes in motivation.

The two kinds of evidence to indicate that it is a valid measure of n Achievement, when subjects are aroused by experimental conditions, are (a) the nature of the procedure used to arouse the need, and (b) a comparison with the effect of hunger on similar stories. Murstein, in a review of the validity of TAT n Achievement measures, draws the following conclusion:

> The n-Ach measure is probably too coarse for predicting a specialized kind of achievement because n-Ach is composed of a large variety of achievement behaviors weighed equally, with no distinction made with regard to the success or failure of the achievement strivings. It is likely that the custom built thematic test of the future will depict a specific kind of achievement or other need and will then try to predict a specific kind of achievement, ... It is not inconceivable, therefore, that separate tests or cards will be used for school, social and vocational achievement (Murstein, 1963, p. 367).

Another interesting question related to the generality of the measure is whether or not it is possible to fake a high n Achievement score. The McClelland et al. (1953, p. 183) results seem to indicate that it would be difficult to fabricate a high n Achievement score without knowledge of the pertinent categories and procedure of scoring projective techniques. If one accepts the implicit

assumptions underlying the belief that a TAT protocol gives an invaluable picture of the subjects' personality, it seems unlikely that one could markedly distort a response in a socially desirable direction.

The assumptions underlying the TAT as outlined by Murstein (1963) are as follows:

1. No response is accidental. Every response is meaningful for the analysis of a personality.
2. A protocol is a sufficiently extensive sampling of a subject's personality to warrant formulating judgments about it.
3. The subject is unaware of what he discloses about himself.
4. The strengths of a need may be gauged from its manifestation directly, indirectly, or symbolically in a thematic test.
5. There is a parallel between projective technique behavior and behavior in the social environment.

Murray states the purpose and rationale for using the TAT which is as follows:

> Special value resides in its power to expose the underlying inhibited tendencies which the subject, or patient, is not willing to admit, or cannot admit because he is unconscious of them. ... If the pictures are presented as a test of immagination, the subject's interest together with his need for approval, can be so involved in the task that he forgets his sensitive self and the necessity of defending it against the probings of the examiner, and before he knows it, he has said things about an invented character that apply to himself, things which he would have been reluctant to confess in response to a direct question. As a rule the subject leaves the test happily unaware that he has presented the psychologist with what amounts to an X-Ray picture of his inner self (Murray, 1943, p. 1).

One may tentatively conclude, if these authorities are correct, that the presence of social desirability in TAT responses is minimized.

High School Studies. Although the McClelland TAT fantasy - test

of n Achievement was developed using college students, McClelland _et_ _al_. (1953, p. 167) suggest that "the method of obtaining an n Achievement score which was originally developed on a population of male college students is valid when applied to experimentally induced changes in motivation in a population of younger male subjects representing a broader socio-economic base".

Sex _Differences_. Sex differences were extensively probed by Veroff, Wilcox, and Atkinson (1953). Girls manifested a great deal of n Achievement to male pictures regardless of the experimental condition, while men reacted with a great deal of n Achievement only to the achievement situation.

A study by Field quoted in McClelland _et_ _al_. (1953) reported that college women score significantly higher on n Achievement than men under the relaxed condition. Women were left unmoved by references to leadership and intelligence; but if they were socially rejected, their achievement motivation increased, as measured in the standard way. The men, on the other hand, were unaffected by social rejections on the achievement dimension. The reasonable way to interpret this seems to be in the terms of the different expectations involved in achievement motivation for men and women in our culture. Women have achievement drives which are tied up with getting along successfully with other people, whereas men have achievement drives associated with "getting ahead", getting a good job, being cleverer than other men, and leading others.

Veroff has argued (McClelland _et_ _al_., 1953, p. 173) that perhaps

any test situation in which girls are competing with boys contains more achievement motivating cues for the girls. Thus, when one considers the smaller proportion of women in college who are competing in a predominantly male setting, social acceptance may manifest itself by means of intellectual pursuits.

High school girls did not show higher n Achievement scores under achievement-oriented conditions (McClelland *et al.*, 1953, p. 172). It may be that the instructions do not arouse achievement striving in women or that the neutral condition actually aroused achievement motivation to such a degree that there was no room for further increases under achievement-orientation (McClelland *et al.*, 1953, p. 173). This may be especially true when one uses pictures emphasizing male figures and roles. Wilcox (McClelland *et al.*, 1953, p. 175) has performance data which tend to indicate that the n Achievement score is valid when applied to women.

For most women the eliciting condition is social acceptability whereas for men a situation invoking challenges to leadership and intelligence is dominant while social acceptability is not. It is suggested that achievement in our society is more properly a male perogative than a female one.

Edwards Personal Preference Schedule

Development of the Edwards Personal Preference Schedule. The most comprehensive inventory designed to assess the strength of the needs defined by H. A. Murray in his manifest need system is the Edwards Personal Preference Schedule. "The Edwards Personal Pre-

ference Schedule (EPPS) was designed primarily as an instrument for research and counseling purposes, to provide quick and convenient measure of a number of relatively independent normal personality variables. The statements in the EPPS and the variables that these statements purport to measure have their origin in a list of manifest needs presented by H. A. Murray and others. The names that have been assigned to the variables are those used by Murray" (Edwards, 1959).

The EPPS provides measures of 15 personality variables. The Achievement (Ach) personality variable was used as an independent variable in the present study.

Edwards' (1959) definition of the Achievement variable is as follows:

> Ach Achievement: To do one's best, to be successful, to accomplish tasks requiring skill and effort, to be a recognized authority, to accomplish something of great significance, to do a difficult job well, to solve difficult problems and puzzles, to be able to do things better than others, to write a great novel or play.

The inventory consists of 210 different pairs of forced - choice statements. 28 items comprise the Achievement personality variable scale.

The highly operational definition of the "manifest" need, which are merely rewordings of the items, reflect Edwards' approach to the development of this instrument. It is somewhat unfortunate that the variable was termed a "manifest" need. One has difficulty in understanding what is meant by "needs" and it would appear, based upon research of the social desirability factor and the EPPS items, that the items themselves, at least superficially elicit a person's

preferences rather than needs or states of deprivation. Since some misunderstanding arises when the Achievement variable is interpreted as a "need", it is probably best to interpret a score as indicating a personal preference for an activity and a variety of interpersonal relationships.

The emphasis in constructing the EPPS was upon the measurement of those aspects of the personality in which relatively normal people would differ. These are taken as variations in personal preferences within the normal range of behavior rather than deviations from some norm in the direction of maladjustment.

Reliability. Edwards (1959), using the 1,509 subjects for the college normative group, reported a split-half reliability coefficient, corrected by the Spearman-Brown formula, of .74. The test and retest, with one week interval, reliability coefficient was .74 for the n Achievement scale. The stability coefficient was based upon the records of a group of 89 students at the University of Washington.

Scores on the EPPS for 1,633 high school students, administered by Klett (1957a), are given in Table I. The split-half reliability coefficient was .53 for the high school sample.

Validity. Interpretation to be placed upon agreement or lack of it, between self ratings and inventory scales as evidence for validity is suggested by Edwards (1959) to involve many difficult and complex problems. A similar conclusion can be made concerning studies of peer ratings and scores on an inventory. Scant evidence

TABLE I

MEANS AND STANDARD DEVIATIONS OF THE EPPS ACHIEVEMENT VARIABLE FOR A HIGH SCHOOL SAMPLE

Variable	Means		Standard Deviations	
	Boys	Girls	Boys	Girls
Achievement	13.88*	11.13	4.01	4.06
N	799	834		

* This mean is significantly larger ($p < .01$) than the mean for girls.

for the validity of the Achievement scale is provided by an investigation of the relationship between the Achievement variable of the EPPS and other variables which should, in theory, be related to the inventory variable in specified ways. Some evidence is available from a study using the Guilford-Martin Personnel Inventory and the Taylor Manifest Anxiety Scale. The validity data reported in the manual are so meager as to be virtually negligible.

Sex Differences. The means for the college and high school samples, were significantly larger for the men, at the one per cent level, than the corresponding means for the female samples. All standard deviations, men and women as well as college and high school samples, did not differ from one another.

Social Desirability. An attempt was made in the EPPS to minimize the influence of social desirability in responses to the statements. The pairs of statements comprising the items of the EPPS have been matched with respect to their social desirability scale value, in so far as this was possible. The statements were scaled for social desirability using the psychological scaling method of successive intervals developed by Edwards and Thurstone (1953).

It may be concluded from research using social desirability and EPPS scales with high school, college, and general adult samples (Edwards, 1957; Klett, 1957a, 1957b) that regardless of sex, cultural, social and economic, adjustment, and age differences, individuals tend to describe themselves in essentially the same

socially desirable rather than undesirable terms. The importance of this rather general tendency lies in its relationship to the probability of endorsing self-descriptive personality statements. Although there is a general tendency to endorse self descriptive personality statements, this does not eliminate the possibility of a person endorsing a personality statement as self descriptive, when, in the opinion of a person's peer group, it is a socially desirable characteristic.

Although Edwards matched statement alternative choices for each item in an attempt to minimize social desirability as a factor influencing responses to the item, the Borislow (1958) and Dicken (1959) studies on faking indicate that scores on the EPPS can be deliberately altered to create more favorable impressions, especially for specific purposes. The results of Heibrun and Goodstein (1961) indicate that the individual's social desirability set is an important source of variance in the EPPS, since college students endorsed as self-characteristic the more highly valued statement on at least two out of three ocassions when the statement alternatives were assigned different individual social desirability values. An investigation of various extracted factors that may influence performance on the EPPS were studied by Korman and Coltharp (1962). From their results it can be concluded that: (a) the EPPS items are to a large degree transparent in that their meaning can readily be guessed by naive subjects, (b) there is a significant relationship between a groups' composite EPPS score and social desirability, and (c) there are significant relationships between a subject's self-

description and his production on the EPPS.

Additional evidence by Korman and Coltharp (1962) suggests that the n Achievement scale of the EPPS is relatively transparent. It had a rank of 14 for transparency. The 15 scales of the EPPS were ranked from 1, low, to a high of 15 with 15 indicating the most transparency.

Corah, Feldman, Cohen, Gruen, Meadow, and Ringwall (1958) investigated the extent to which social desirability influences responses to a short form of the EPPS. The results indicated that the factor of social desirability is still an important influence, since, in a statistically significant number of item pairs, judges had a definite preference for one member of the pair as being more desirable. Also, the preference of judges in terms of social desirability correlated highly with actual choices of another group of subjects who took the scale as a standard personality test. The investigators (Corah _et al_., 1958) concluded: "It appears likely that Edwards, in using the method of successive intervals to scale his items, achieved only a first approximation of equal pairings and that additional judgments of the item pairs themselves are necessary along with revisions in pairings before the variable of social desirability can be eliminated from the EPPS".

The conclusion is perhaps open to criticism, however, because the social desirability factor was not operationally defined in the same way as Edwards defined it and different instructions were given to the judges for determining social desirability of an item. Edwards (1959) replicated the Corah _et al_. study except for the fact that

the Corah _et al_. investigation item statistics were obtained only for a selected set of thirty items which were administered out of context of the EPPS whereas Edwards administered the entire form. The results of the two studies were not consistent which serve to emphasise the fact that removing items from the context of a standardized test may alter the nature of the items and responses to them. This variation in procedure might account for the divergent results. Perhaps the most that can be said at present is that the matching of items in the EPPS has reduced but not eliminated the effects of social desirability upon the test-taking attitudes.

In general, it appears that the social desirability variable was not as fully controlled in the EPPS as had been anticipated. A subject who can guess that certain good qualities are more important than others in decisions the tester will make can distort his responses to earn high scores in those qualities and low scores in qualities which seem unimportant on this occasion. Also, one has no assurance that the ultimate choice between alternatives is dictated by motive only and not by, say, the conscious (and often inaccurate) self-picture (McClelland, in Atkinson, 1958, p. 25).

High School. In addition to the data presented in Table I, Klett (1957a) found that there were no differences in the scale values of items judged by high school students from different socio-economic levels. Moreover, there was no difference in the judgments of high school and college students.

The method of successive intervals to scale items was also used

on the high school sample responses. Matching of items by scale values in the high school group was not as good as in the college sample.

Studies Using the EPPS and TAT

A pressing concern is the lack of specificity in usage of terms. The n Achievement score has been used in the EPPS and in ratings of behavior. McClelland (Atkinson, 1958, pp. 7-42) has indicated that self-evaluation and behavioral measures of motivation are essentially uncorrelated. It is therefore misleading to use similar labels for different operational measurements. One position is that the decision as to which term to use in labelling the achievement motivation personality dimension should depend not so much on the author's theoretical dispositions as on the method of measurement which provides the operational definition for the term.

Since both the EPPS and the TAT independently were intended to measure the same variable, namely n Achievement, Melikian (1958) hypothesized that there would be a high correlation between the two scores. No relationship was found between the n Achievement scores. The results were explained by stating that there is a possibility the two instruments are used to measure the achievement motive at different levels. Responses to the EPPS items are made to clearly structured stimuli, whereas in the TAT responses are to a variety of cues, both internal and external, in the environment and in the pictures. This difference suggests the possibility that the two measures tap different levels of achievement motivation. The absence of a relationship

between the two measures may be accounted for by suggesting that one measures a manifest level whereas the other measures a latent level (McClelland *et al*., 1953, pp. 196-217).

Also, Bendig (1957), Birney (1957), Dilworth (1958), Himelstein, Eschenbach, and Carp (1958), Marlowe (1959), and Shaw (1961) report nonsignificant correlations between the results obtained when using these instruments which purport to measure the same construct, namely n Achievement.

A significant ($r = .26$, $p < .03$) relationship was reported, by Weiss, Wertheimer, and Grosbeck (1959), between the EPPS and TAT n Achievement scales which is the exception to the general findings.

Correlations were calculated between a measure of verbal ability and the n Achievement variables (Bendig, 1957). The correlations were nonsignificant.

The conclusion reached by investigators studying the relationship between the TAT-fantasy method and the EPPS is summed up by Marlowe (1959), which is here taken to be representative of the reported research, as follows:

> The absence of any relationship between the fantasy and PPS measures indicates that these tests are not equivalent measures of n Achievement and that inferences from one test cannot be generalized to the other when n Achievement is the resultant variable. Thus, the present data support the earlier finding of Birney and that of DeCharms *et al*. (1955), who also found that Ss perform in dissimilar manners on two tests which supposedly measure the same thing (n Achievement) when one test is an indirect measure of the motive and the other a direct measure.

With discouraging regularity investigators have reported the absence of relationship between the measures of achievement motivation.

McClelland _et_ _al_. (1953), DeCharms, Morrison, Reitman, and McClelland (1955), and Strodtbeck (1955) have suggested that value for achievement (v Achievement) and need for achievement (n Achievement) should more correctly designate the type of achievement motivation score. The scores would be obtained from a direct measure, e.g. inventory, or an indirect measure, e.g. projective technique, respectively.

CHAPTER III

GENERAL RESEARCH RELATED TO THE STUDY

Discrepant Achievement and Personality Traits

Introduction. Although there are, throughout this paper, references to overachievement and underachievement, the writer agrees with Dulles (1961) that the terms overprediction and underprediction represent more fully the intended meaning. This may perhaps eliminate some of the value connotations related to the student.

A student may be classified as an achiever if his academic achievement is, within the limits established by considering errors of measurement, what would be expected from a consideration of his intellectual ability, as measured by standardized tests. An overachiever exceeds an aptitude-based expectancy of academic performance. Conversely, an underachiever falls below his expected performance.

Academic achievement and aptitude are one criterion that may be used to study variations in personality differences as revealed by n Achievement scores.

One general problem and a partial solution is suggested by Shaw as follows:

> The problem of academic underachievement among the brighter segment of school students has received much attention of late from psychologists, educators, and lay people. A variety of approaches has been taken in an effort to understand the problem, and one of the most promising of these seems to be a study

> of the personality differences which exist between bright students who are doing academic work commensurate with their ability and those who are receiving grades far below the level that might be expected of them (Shaw, Edson, and Bell, 1960, p. 193).

A survey of research literature reveals that considerable attention has been given to the problem of academic underachievement whereas relatively little effort has been put forth on academic overachievement. Terms have been defined in different ways and a wide variety of sampling methods has been employed.

Personality Traits. Taylor (1964) concludes that the weight of evidence in the literature, on personality traits and discrepant achievement, would seem to support the following conclusions concerning the relationship of certain personality traits to academic achievement.

1. The degree to which a student is able to handle his anxiety is directly related to his level of achievement.
2. The value the student places upon his own worth affects his academic achievement.
3. The ability to conform to and/or accept authority demands will determine the amount of academic success.
4. Students who are accepted and have positive relationships with peers are better able to accept themselves. Students who do not have peer acceptance generally go outside the school environment for their satisfactions.
5. The less conflict over independence-dependence relationships a student copes with, the more effort he places on achievement.
6. Activities which are centered around academic interests are more likely to produce successful achievement.
7. The more realistic the goal the more chance there is of successful completion of the goal.

Selection Techniques. In a review of A Classification and Comparison of Techniques Used in Selecting Under- and Over-Achievers, Farquhar and Payne (1964) conclude that "there appears to be little or no agreement among techniques in which an individual finally is designated as a discrepant achiever." It is obvious that a dire need exists to adopt standard definitions of the procedures for identifying descrepant achievers.

Farquhar and Payne (1964) have proposed criteria for effective selection of underachievers and overachievers which are as follows:

A. The achievement criterion should:
    1. Be academic - not contaminated with activity courses.
    2. Take under consideration differences in grading systems of various schools.

B. The aptitude predictor should:
    1. Be heavily loaded with valid and reliable academic predictor factors.
    2. Be a stable estimate as free as possible of such spurious effects as:
        a. Chance high scores by low achieving non-readers.
        b. Chance low scores due to confusion in test administration or poor test motivation.

C. The selection model should:
    1. Represent the full range of achievement and ability.
    2. Be built separately for the two sexes.
    3. Classify the criterion groups with a minimum chance of overlap.
    4. Preferably meet the assumptions of a parametric statistic.
    5. Control on regression effects.

Edwards Personal Preference Schedule. Gebhart and Hoyt (1958) defined two achievement levels (under and over), three ability levels (high, average, and low) and college major and related these to scores on the EPPS n Achievement variable. They found that overachievers and high ability students score higher on achievement. From the

findings of this study, the investigators reached the following conclusion:

"On the basis of the present study, three different patterns of overachievement can be hypothesised: (a) overachievement associated with a drive to compete (Achievement); (b) overachievment associated with a drive to organize or plan (Orders); and (c) overachievement associated with intellectual curiosity (intraception). Similarly, two patterns of underachievement may be hypothesised: (a) that associated with a need for variety (change), wherein academic studies may appear boring and routine; and (b) that associated with social motives (Affliation, Nurturance), wherein friendship may be placed above scholarship."

Diener (1960) and Krug (1959) have reported that the n Achievement scale of the EPPS discriminated between male overachievers and underachievers as stated by Gebhart and Hoyt.

A study by Uhlinger and Stephens (1960) provided only partial support for the hypothesis that high achievers have a greater need to achieve than low achievers. A nonsignificant correlation was reported between obtained grades and n Achievement scores.

McClelland Thematic Apperception Test of n Achievement. In general, people with a high achievement imagery index score complete more tasks under achievement orientation and tend to get better grades in college (McClelland et al., 1953, p. 327). In a summary of research on the n Achievement measure McClelland et al. (1953) report correlation coefficients of .32 ($p < .05$) between n Achievement and

and preceding semester grades, .51 ($p < .01$) between n Achievement and grades for two succeeding semesters, and .51 between n Achievement and current as well as succeeding grades. When scores on an aptitude test were partialed out of the correlation coefficient between n Achievement and grades both current and succeeding, the residual correlation between n Achievement and grades remained a significant .39. Weiss, Wertheimer, and Grosbeck (1959) reported a significant correlation coefficient of .34 between previous grades and n Achievement. When underachievers and overachievers were compared, the overachievers scored significantly higher ($p < .02$) than the underachievers on n Achievement (Morgan, 1952). Thus there is evidence that n Achievement has predictive ability and that predictive ability may not be wholly dependent upon measures of intellectual ability.

Studies have also been reported where the correlation coefficients between n Achievement and grades were nonsignificant. Lowell (1952) found a correlation of .05 between n Achievement and previous grades. Correlation coefficients of .00 for an N of 100 (Birney, reported by McClelland _et al_., 1953), and .06 for men with an N of 136 and .14 for women using an N of 108 (Bendig, 1959) between n Achievement and grade point average indicate that one should be cautious in drawing general conclusions about the predictive validity. In two studies by Cole, Jacobs, Zubok, Fagot and Hunter (1962) no significant differences were found for the women, but the underachieving males manifested more achievement imagery than overachievers. Shaw (1961) failed to distinguish

underachievers from overachievers in either sex group, using the McClelland four picture series.

Factor analytic studies by Bendig (1959) and Mitchell (1961) have shown that the TAT n Achievement method does not produce a unitary achievement motive construct. Bendig's (1959) conclusion was that "the McClelland test is too weakly loaded with the 'achievement-motive' factor to be useful as a predictor of course achievement".

The simple theoretical concept of n Achievement is actually a very complex concept when one attempts to test the theoretical assumptions. It might be better to speak of specific achievement behaviors rather than of an ubiquitous n Achievement. That different motivational states and environmental circumstances can produce either similar n Achievement or similar lack of it is explained by McClelland _et al_. (1953) as follows:

> ... we found evidence for differences between the subjects who are moderately high on the achievement motive index and subjects who are very high. Those who are moderately high appear to be actuated more by a fear of failure as suggested by some Rorschach indicators of anxiety, a tendency to remember completed tasks, and by a resistance to recognizing words connoting failure. Those who scored very high, on the other hand, appear to be actuated more by a hope of success as indicated by greater sensitivity to success words and better recall of incompleted tasks (p. 327).
> . . .
> Thus, for instance, it could be argued that if you were trying to predict excellence of performance when achievement cues are present (i.e., under pressure), then the difference in n Achievement scores between Neutral and Achievement-oriented conditions might be the best measure of sensitivity to the demands of the situation. If, on the other hand, you wanted to predict who would be most apt to work hard when the cues did not demand it, then the

> n Achievement score obtained under Neutral conditions might be best. It is even possible that educational institutions differ in the amount of "pressure" or emphasis that is put on academic achievement. Consequently, the n Achievement score one would use for predicting grades in a particular institution would be a function of whether it was a "low pressure" or "high pressure" institution, since it is reasonable to expect that different people would get good grades in the two places (p. 240).

Perhaps the only general conclusion one can draw is that caution should be used when interpreting n Achievement scores for predictive purposes, especially when only one individual is being considered.

Social Desirability

Research by Fordyce (1956) supports the evidence from other studies cited by him that much of the variance of objective-type personality inventories can be accounted for in terms of a dimension of social desirability. Fordyce became interested in studying social desirability of MMPI items as a result of Edwards' reported research that the frequency of endorsement of personality inventory items correlated .78 with the rated social desirability of the items.

The importance of this dimension in inventories is explained by Edwards as follows:

> I am contending that regardless of the multidimensional nature of personality statements, with respect to content, it is still possible to describe each one in terms of its position on the social desirability continuum. The social desirability continuum appears to me to be the most important single dimension on which to locate personality statements. The importance of the dimension rests in the fact that, if we know the position of a statement on it, we can predict, with a high degree of accuracy, the proportion of individuals who will say, in self-description, that the statement does describe them (Edwards, 1957, p. 3).

Edwards (1957) has shown that people tend to agree in judging items from personality inventories on a dimension that he terms social desirability. The operational definition in terms of the instructions he gives subjects who make judgments on it is as follows: "Remember that you are to judge the traits in terms of whether you consider them desirable or undesirable in others" (Edwards, 1957, p. 4). There can be no quarrel with a strict operational definition.

Fordyce (1956, p. 171) suggests that "social desirability" has more meaning than "desirability for well-being" proposed by DeSoto, Kuethe, and Bosley (1959). The definition of social desirability stated by Fordyce is as follows: "Consensus judgments as to what behavior, feelings, and attitudes win social approval in American society." This definition refers to the social approval or disapproval it earns the person who possesses it. The writer agrees with this position but would change the definition to read "Within a school setting in a Canadian society" for the purpose of this study.

It is pointed out by Edwards (1957) that different social desirability (SD) values might be expected if the instructional set were narrowed so as to refer to more specific criterion groups, e.g. salesman or student. Borislow (1958) showed that when subjects are instructed to fake on the EPPS different patterns of fakability emerge as a function of whether a personal or social frame of reference is used. Evidence presented by Cowen, Budin, and Budin (1961) confirmed the results of their earlier study where they found that under the personal set, females used more

extreme SD ratings than do males, while males are more variable in their SD perceptions. When the results across sets are contrasted, it is possible to demonstrate that respondents are more variable under the personal set than they are under the social set and in a parallel sort of way, that the personal set yields significantly less extreme mean SD ratings than does the social set.

DeSoto et al. (1959) argue that social desirability is better defined as "what the testee considers most essential for his well-being" and not "what is socially approved." This may be so in the United States school situation where social activities are placed above academic endeavors. However, in Alberta, one will probably find a closer relationship between what is socially approved and activities considered most essential for a student's well-being.

It is suggested by Edwards (1957) that faking on personality inventories is primarily due to the tendency of individuals to describe themselves in socially desirable terms. With strong evidence presented to indicate that faking is common on personality inventories, Sheldon (1959) recommends the use of a new statistic to be noted on psychological inventories which is a fakability score. The fakability score would indicate the probable extent to which an inventory could be faked. It would be just as much a characteristic of a test as validity and reliability estimates.

The findings reported support the writer's position that faking in a socially desirable manner on personality tests is a product of the respondent's drive to maintain a socially desirable

mask or front.

Cultural Value Orientation

Introduction. If one desires to evaluate a theory and the accompanying measurement instruments that have been evaluated by researchers one logically prepares a review of the research literature and then carries out a study based upon hypotheses developed from the research literature and one's own thinking. The implicit assumption suggested is that the previous research and the present study will be embedded within the same "value system". However, if the "value systems" differ appreciably in such a manner as to differentially affect the results of research experiments, one should include this extraneous variable in the development of a theory.

The majority of published research on n Achievement has been published in the United States. The study reported here was carried out in Alberta, but was based upon the research evidence presented in the United States.

Are both Canada (Alberta) and the United States academically achievement or socially oriented? Do they hold the same "value system" or different ones? Confusion often arises when the Canadian and United States educational systems are compared. This is further expanded by Downey as follows:

> Canadians typically believe that their educational systems closely parallel those in the United States; in fact, Canadians occasionally are somewhat uncomfortable with this fact. It may be that their discomfort is born of a certain conflict arising out of the fact that Canadian and American educational systems

> tend to function similarly, in spite of subtle but basic differences in the educational view points of the two countries (Downey, 1960, p. 199).

The notion that Alberta subscribes to an "Academic Achievement Value System" will be presented. The writer has noticed several schools where the "top academic" students have their names on a plaque in the school and are awarded "A" pins at an "Award Day" held in honor of the students. Also, a "Governor-General's Medal" is presented to several Alberta students who show outstanding scholarship on the provincial grade nine final examinations. Personal experience from looking at "final examination marks" with school administrators has left strong impressions regarding the definition of a "good student". One may also note the rigid academic requirements for university entrance in Alberta.

To further illustrate the importance of students' academic standings, an outline of one Alberta district's policy towards "final examinations" will be presented. Grades seven and eight wrote Divisional examinations, ten and eleven wrote Zone examinations, and nine and twelve wrote Provincial examinations for the explicit purpose of evaluating students' level of academic achievement.

A conclusion reported in the Report of the Royal Commission on Education - Province of Alberta (1959) on the nature of the tasks of the Public School was that "the public assigns greater importance to academic studies than to non-academic, but favors increased emphasis upon the latter.' An opinion presented later will suggest that an academic emphasis is secondary in the United States.

Perhaps this is "verbalized" agreement by Canadians with the emphasis in schools "South of the Border" but is not sufficiently great as to influence the practice in Alberta Schools. The first three tasks presented in the Report of the Royal Commission (1959) reflect the Commission's estimate of the main job of the public schools in Alberta. They are as follows:

1. To develop the communication skills - speaking, listening, reading writing and the art of expressing ideas clearly through composition.
2. To develop understanding and mastery of the basic computational skills and application of arithmetical processes.
3. To develop knowledge, skills and appreciation regarding that part of the cultural heritage selected for inclusion in the curriculum--for the sake of the individual, for the purposes of continuing education, and to prepare for employment and contribution to society.

A summary of the relative importance of educational aims in the high school is reported in Public and Professional Opinion Regarding The Tasks of Alberta Schools (1959). The results are shown in Table II.

The "value system" in Alberta has been shown to be largely academically oriented which is summarized by Andrews (1959) as follows:

> In general it may be concluded that the tasks of most importance both in practice in the schools and as desired by all groups studied are what might be described as basic intellectual tasks. These are clearly predominant over the personal, social, societal, aesthetic, and vocational tasks.

TABLE II

COMPARISON OF PRESENT SCHOOL PRACTICE WITH PUBLIC OPINION IN ALBERTA REGARDING THE ORDER OF IMPORTANCE OF THE TASKS OF THE HIGH SCHOOL

Tasks of the High School	Present School Practice Rank	Public Opinion in Alberta Rank
35 A continuing desire for knowledge-- the inquiring mind	1	2
33 Efficient use of the 3R's-- the basic tools for acquiring and communicating knowledge	2	1
34 The habit of weighing facts and imaginatively applying them to the solutions of the problems	3	3

Comparison of Canada and the United States. Downey (1960) has prepared an extensive analysis and summary of the tasks of the Public School in Canada (Alberta) and regions of the United States. A list of the differentiating factors, regarded as tasks of education, between Canadians and Americans are shown in Table III.

It is apparent that the list of tasks favored by Canadians, prepared by Downey (1960), do not differ, to any marked degree, from the tasks outlined previously which were taken from Andrews (1959), The Report of the Royal Commission (1959), and the writer's experience as a student and teacher in Alberta.

A quotation from Downey provides an excellent summary comparison which is as follows:

> . . . it may be noted that Canadians appeared to believe, more emphatically than did Americans, that the public school should serve the individual; Americans believed on the other hand, that it should serve society. Canadians, as a group, (namely Albertans) assigned considerably higher priority than did Americans to knowledge, scholarly attitudes, creative skills, aesthetic appreciation and morality, as outcomes of schooling. Americans emphasized physical development, citizenship, patriotism, social skills, and family living much more than did Canadians. The former attitudes may be attributable to a value orientation emphasizing the perfection of the individual, the latter to a value orientation emphasizing the improvement and well being of society (Downey, 1960, pp. 197-198).

Because the two societies have been shown to be markedly dissimilar in their school and society value systems, one would expect this to influence the manner in which a subject in Alberta, as compared with the United States, answers items on a need for achievement test. A high n Achievement score would probably have a slightly different meaning when interpreted in a certain society

TABLE III

SUMMARY OF SIGNIFICANT DIFFERENCES BETWEEN CANADIAN AND AMERICAN PERCEPTIONS OF THE TASK OF THE PUBLIC SCHOOL

High School	
Favored by Canadians	Favored by Americans
Creativity a	World Citizenship a
Desire for Knowledge a	Patriotism c
Aesthetic a	Physical a
World Citizenship b	Man to Fellow Man b
Consumer b	
Elementary School	
Favored by Canadians	Favored by Americans
Desire for Knowledge a	Patriotism c
Ethical b	Physical a
Aesthetic b	Home and Family a
Consumer b	

a Educators only b Non-educators only c Both

as compared with another value system. One would expect, from the evidence presented, that Alberta students, if faking on a personality inventory, would tend to subscribe to a socially desirable academic achievement orientation rather than to a social frame of reference.

High School Drop-Out Rate

Another relevant variable is the drop-out rate in Alberta schools. The annual reports of the Department of Education (Department of Education of the Province of Alberta, 1963) showed that there is a tendency for many males to leave school after grade nine while the majority who remain continue through to grade twelve. There is generally a lower drop-out rate of females than males at the end of the Junior High School period. For females the most pronounced drop-out is after the completion of grade eleven. While there is a trend for females to outnumber males in grade ten, the converse is true in grade twelve where the number of males consistently exceeds that of the female enrollment. One suggestion to explain this differential drop-out rate is that, in general, males appear to be challenged by intellectual pursuits whereas females seem to be more concerned with interpersonal relationships.

"As might be expected, many adolescent drop-outs have lower intelligence quotients than the average of those who finish school" (Dillion, 1949, reported in Jersild, 1963, p. 333). Although level of ability is one factor it "is not the only factor, and in many instances it is not the deciding factor" (Jersild,

1963, p. 334). The writer suggests that many below average ability students have a low level of achievement motivation and hence drop-out of school. Thus, below average ability students who remain in school would, it is suggested, have a high level of achievement motivation.

CHAPTER IV

ORIENTATION AND PROCEDURE OF THE STUDY

Theoretical Framework of the Study

Despite the great dissimilarity of the McClelland and Edwards need for achievement tests, both have been used to measure n Achievement. Since correlations between the two test scores are generally nonsignificant, this leads to confusion as to what each instrument does in fact measure. A resultant conceptual reinterpretation of the meaning of the obtained scores is generally postulated by researchers in this area but few proceed with further studies to test their speculations.

It is readily apparent that there is a rather pronounced lack of consensus about the conceptual and methodological aspects of the achievement motivation construct. There is urgent need for additional research that will provide structure for the currently amorphous state.

Attempts to explain the discrepancy between the results derived from each of the two measures result in suggestions of a possibility that the two methods measure the achievement motive at different levels or that they are different types of need for achievement.

The writer takes the view that these instruments measure different types of need for achievement rather than levels because the use of "level" implies that one "type" is better. Since preference for one rather than the other is, at present, a value judgement, the writer will refer to the two measurement instruments as different

types. The writer suggests that the study of each type will contribute to the understanding of achievement motivation.

The two types of need for achievement may be designated as v Achievement (Strodtbeck, 1958) and n Achievement (McClelland *et al.*, 1953). The distinction between persons with high v Achievement and n Achievement scores, as defined below has been prepared from the reports of McClelland *et al.* (1953), DeCharms *et al.* (1955), and Strodtbeck (1958).

The EPPS will be considered as a representative test to provide a "direct measure" of achievement motivation. This type is denoted as v Achievement (value for achievement). Characteristic of persons with high v Achievement scores is that they are: (a) more responsive to authoritative opinions as to what constitutes correctness or success, (b) more conformist, (c) not desirous of being in competition with an internalized standard of excellence since they do not involve the dimensions of conformity, or follow the lead of expert society, and (d) an outer-oriented or other-oriented group.

The TAT-fantasy method test is a representative instrument of an "indirect measure". McClelland *et al.* (1953) refer to its derived score as being an indicator of the subject's level of n Achievement. Attributes of persons high on the n Achievement scale is that they (a) tend to be individualistic and unwilling to be pressured into conformity, (b) tend to do better on tasks which are based upon competitive tests, and (c) are inner-oriented or self-oriented.

It is assumed that there are persons whose performance on tasks is largely attributable to external pressures, i.e. high v Achieve-

ment, whereas others are inner-oriented or self-oriented, i.e. high n Achievement. Some people are, it is suggested, flexible in their approach to the solution of problems and are unwilling to be pressured into a role of conformity by following specific instructions. In the most general sense one could designate these people as creative. Although Getzels and Jackson (1962) studied students who were all overachievers, which may have partially resulted from their special situation, and, by public school standards, of high academic ability, their comments in reference to a high creativity group and a high I. Q. group may be relevant in developing the proposed theory of need for achievement. Their observations were as follows:

> ... students in our high creativity group who would by conventional criteria be labeled "overachievers" actually are less inclined toward "greasy grinding" for good grades (just for the sake of good grades) than are other students (Getzels and Jackson, 1962, p. 27).

Since the high creativity group was selected from a high I. Q. sample and the high I. Q. group was chosen on the basis of a low creativity score from the same sample, one may conclude that both groups would be considered high I. Q. groups but were classified on the basis of creativity test scores. In terms of the present theory, the high creativity group would be an example of students with high n Achievement whereas high v Achievement would be exemplified by the high I. Q. group. If the moral and adjusted subjects referred to by Getzels and Jackson (1962) are considered to be, respectively, persons who score high on n Achievement and v Achievement tests, the description given by Getzels and Jackson

is in agreement with the present classification presented by the writer. The adjusted subjects

> "... seem to prefer social interaction to individual achievement, to seek experiences which are immediately enjoyable as against those that promise more remote gratification, to find more satisfaction in experiencing with others than in asserting their own autonomy, to be willing to sacrifice moral commitment in the interest of interpersonal harmony. The moral subjects tend to reverse these trends" (Getzels and Jackson, 1962, p. 159).

The results of a study by Shaw and Brown (1957), among overachieving and underachieving bright college students, are as follows:

> ... although these two groups differ significantly from the point of view of grade point average at the end of the freshman year, they do not differ at all when compared on the basis of standardized tests.

The explanation suggested by the present theory would be that the overachievers, high on v Achievement, would follow the examples and suggestions of authorities and consequently would, when writing examinations and papers, be in full agreement with the authorities' stated views. Persons high on n Achievement would tend to introduce their own ideas and manner of expression which would agree less with the authority and hence would be evaluated at a lower academic level. On the other hand, when a standardized test was taken by the total group of students, the opinions of the authority who had set and marked the answers were unknown and following the lead of an expert was therefore impossible. Thus, the two groups did not differ on the results of the standardized test. If a learning situation with no guiding structure, e.g. no

lectures or examinations, is taken as the next example where external pressures are minimized, it is postulated that a person with high n Achievement would show superior performance over a person with high v Achievement in the utilization of the learned material. It is assumed that other factors such as ability and material studied are equated.

The results obtained by Morgan (1952) using the TAT are in agreement with previous research on the achiever but, although also in agreement regarding the underachiever, indications are that the resulting bimodal distribution of the underachievers' scores need further clarification. Morgan's results are as follows:

> ... the achiever group (mean of 17.80 and SD of 7.11) scored significantly higher than the nonachiever group (mean of 13.47 and SD of 8.31) in achievement motivation as measured by the TAT. The distribution of n Ach scores of achievers appeared approximately normal while the nonachiever n Ach score distribution was bimodal with one cluster above a score of 18 and another cluster below a score of 11. Twenty per cent of the achievers scored at or below the nonachiever median of 12 while 37 per cent of the nonachievers scored above the achiever median of 18 (Morgan, 1952, p. 296).

Although thirty seven per cent of the underachievers scored high on the TAT, they failed to achieve an academic standing commensurate with their academic aptitude which is contrary to expectations. It is suggested that some underachievers may score high on a n Achievement rather than a v Achievement scale. The n Achievement type of motivation does not manifest itself by a seeking of high academic marks per se, unless the personal motive is an academic achievement orientation, but rather directs the individual towards seeking knowledge in a personal self-directed frame of reference. Thus,

emphasis is placed upon the general acquisition of knowledge rather than learning for the sake of receiving high marks.

When one considers that a subject's score on the TAT or EPPS reflects a personal as well as a social basis for "motivational drive", one wonders what the true interpretation should be of a n Achievement score. Goslin refers to tests in general but his statement is taken to be equally applicable to tests of n Achievement. His views are as follows:

> Overall achievement motivation has been shown to be related to social values and child-training practices and consequently to social class, ethnic, religious, and other subcultural groupings which vary along these dimensions. We are therefore forced to return to the influence of cultural and environmental factors in order to understand the origin of differences in motivation when taking a test (Goslin, 1963, p. 42).

It has previously been suggested that the EPPS can be faked in a socially desirable direction whereas responses on the TAT are not easily distorted. On this basis, without considering the validity and reliability, the TAT should more accurately describe a person's level of achievement motivation.

What one values as a basic "motivational drive" may depend upon the environmental circumstance, e.g. school, peer group, or family. If one distorts responses to items on the EPPS, it is assumed that they will be in a socially desirable direction which may be specific to the individual's personal present situation or in general agreement with his cultural values. For the purposes of this study reference will only be made to a personal or social situation.

When need for achievement tests are administered to students

in a high school, one would expect both personal and social need for achievement to be manifested in the test scores. It is suggested that in Alberta, social need for achievement, a function of social pressure in this society, manifests itself in academic need for achievement. The personal, in contrast to the social need for achievement, frame of reference may or may not be in harmony with level of academic need for achievement.

If social pressures are paramount, the v Achievement score will predict need for achievement. However, when personal needs are dominant, the n Achievement score will prove to be the superior predictor of need for achievement.

The special case of underachievers' scores on a n Achievement scale requires further elaboration. It is assumed that the distribution of underachiever n Achievement scores is bimodal (cf Morgan, 1952). When reference is made to underachievers scoring high on a n Achievement scale, the possibility that a portion of the underachievers have a low level of achievement motivation is not excluded. Persons scoring high on a n Achievement scale, and classified as underachievers, are considered to be motivated by a personal rather than social need for achievement.

The differences between a group scoring high on a n Achievement scale and another scoring high on a v Achievement scale may be considered in another way. Underachievement may be associated with social motives where friendship is placed above scholarship. A drive to plan and organize resulting from intellectual curiosity may be characteristic of some overachievers. Overachievers and

underachievers may, respectively, be regarded as nonconformists and conformists to the established cultural value system of their group.

The notion that an underachiever is necessarily maladjusted and a less socially desirable person than an overachiever is not accepted by the writer. Raph and Tannenbaum (Jersild, 1963) reported that "in several studies it has been found that underachievers show more signs of personal maladjustment than persons who do well at school, but the findings as a whole are conflicting and inconclusive". "Especially noteworthy is the fact that maladjustment can lead either to underachievement or to overachievement" (Goldman, 1961, p. 322).

Rather than accepting either the doctrine of centralism, a belief that most of man's tendencies are innate, or the doctrine of peripheralism, where the influence of the numerous and ever-present environmental (external) forces may offer an explanation of the dynamics of behavior, the writer suggests both influences are present in all people but that some individuals are more dominated by one type of pressure than another, e.g. innate or external.

If both social and personal pressures are significant, one may suggest postulates to provide an explanation as to why the EPPS and TAT need for achievement scores are uncorrelated.

Postulate I

Persons with high v Achievement scores, as measured by the EPPS, are more susceptible to environmental expectations which for most high school students include acceptable marks. Therefore high v

Achievers will not be underachievers. While overachievers will not necessarily score high on the EPPS need for achievement scale, underachievers will have low scores.

Postulate II

A subject's n Achievement score, as measured by the TAT, will correlate with academic marks to the extent that the academic curriculum is coincident with the personal interests of an individual. Thus, a person with high n Achievement score would be an underachiever if the academic activities did not coincide with personal interests. There are some underachievers, with high n Achievement scores, who express high achievement motivation in other activities. The TAT scores of underachievers therefore will be higher than or equal to those of overachievers.

It therefore follows from postulates I and II that overachievers will score higher on the EPPS than on the TAT, and conversely that underachievers will score higher on the TAT than on the EPPS.

However, if the differences between the cultural value system of Alberta and the United States are taken into account, an explanation of the reasons for the EPPS and TAT scores being uncorrelated differ somewhat from the previous suggestions.

There is a general consensus of opinion (Downey, 1960; Andrews, 1959) that basic intellectual development clearly predominates over the personal and social tasks as the main aim and goal of the Alberta educational system. Since social goals were emphasized in areas where previous research on the EPPS and TAT was conducted, a new

theoretical framework must be developed for Alberta where the dominant need, in general, both in a school setting and also within the larger cultural value system is a need for excellence in an academic achievement situation.

Thus, in Alberta the person with a socially determined v Achievement orientation would be directed towards academic achievement. If the EPPS need for achievement test was faked in a socially desirable direction, it would increase the correlation with academic achievement and would not introduce an irrelevant variable.

The second postulate above would apply to a n Achievement test score, as elsewhere, in that it would correlate with academic achievement only to the extent that a particular curriculum meets a personal need and a given examination tapped the knowledge obtained.

Postulate III

When need for achievement is measured by a v Achievement scale of the EPPS, subjects with high scores are more susceptible to environmental expectations, which for most high school students include acceptable marks. Since, in Alberta, social need for achievement, a function of social pressure in this society, manifests itself in academic need for achievement, high v Achievers will be overachievers.

Postulate IV

It is socially acceptable and approved, within the cultural value system of Alberta, to remain in school. Thus, below average ability students who are still in school at the high school level,

will have a high v Achievement score as measured by the EPPS.

Postulate V

Since below average ability students are handicapped by lack of academic ability, compared to above average ability students, and are still in school, it would follow that below average ability students are high n Achievers.

Hypotheses

Hypotheses derived from each postulate are presented below.

Postulate II

1. Underachievers will score higher on the n Achievement scale of the TAT than overachievers.
2. Need for achievement scores will be higher on the TAT than the EPPS for subjects from an above average ability underachiever group.

Postulate III

3. Overachievers will score higher than underachievers on the need for achievement scale of the EPPS.
4. Need for achievement scores will be higher on the EPPS than on the TAT for subjects from an above average ability overachiever group.

Postulate IV

5. Below average ability students will score higher on the EPPS need for achievement scale than above average ability students.

Postulate V

6. Below average ability students will score higher on the need for achievement scale of the TAT than above average ability students.
7. No significant differences will be found between the EPPS and TAT need for achievement scores for subjects from a below average ability underachieving group.
8. No significant differences will be found between the EPPS and TAT need for achievement scores for subjects from a below average ability overachieving group.

Definitions

Because the terms used in this thesis have a broad variety of meanings, they are here defined more precisely to avoid ambiguity.

Academic Achievement - a composite score derived from a combination of five grade nine provincial examinations to form an aggregate score in raw score units.

Academic Ability - the total score, verbal and quantitative added together, of the School and College Ability Tests (SCAT).

Academic Underachievement - a difference in standard score ($z(0,1)$) form which is less than or equal to -.500 when an individual's academic ability score is subtracted from his corresponding academic achievement score.

Academic Overachievement - a difference in standard score ($z(0,1)$) form which is greater than or equal to .500 when an

individual's academic ability score is subtracted from his corresponding academic achievement score.

Achievement and Ability Standard Scores - z (0,1) scores were calculated using the formula $z_i = \frac{x_i - \mu}{\sigma}$ suggested by Gulliksen (1950, p. 268).

Above and Below Average Ability - is a classification defined by dichotomizing the ability scores at the mean for the research samples.

Samples

Two samples, male and female, were selected from an urban senior high school. This was deemed necessary because the norms established for the EPPS and studies using the TAT have resulted in significant differences between male and female test scores for n Achievement. The male and female groups consisted of 56 and 60 students respectively.

An entire grade ten class of 521 students was selected in May, 1964, from which underachievers and overachievers were identified. The n Achievement tests were administered during the second week of September, 1964.

All students in the two samples had taken the battery of ability and achievement tests described below. A record of their scores was available from the Department of Education in Edmonton.

Test Instruments Used

McClelland Thematic Apperception Test of n Achievement. The

test was developed by McClelland *et al.* (1953) from the original Thematic Apperception Test (TAT). However, there are differences between the method used by McClelland, which was used in the present study, and Murray's classical use of the TAT: (1) Two pictures different from those employed by Murray, having their origin with McClelland *et al.* (1953), and two pictures, 7BM and 8BM, from the TAT were used in the present study. (2) A group testing procedure was used where the pictures were projected on a screen and the subjects wrote their own stories with an imposed time limit. (3) The scoring system, although borrowing somewhat from Murray's need-type of analysis, is quite different. Scoring system C, explained in detail by McClelland *et al.* (1953) pp. 107-138 and by Atkinson (1958) pp. 179-204 and pp. 685-735, was used because of its wider generality in the later work of McClelland.

The standard procedure for administration of the TAT is summarized as follows: Four 8½ x 11 sheets of paper clipped together were handed to each subject. Four sets of questions were printed on each sheet. The sets of questions were spaced on the sheet so that one quarter of the page was allowed for writing about each of them. The four questions, adapted from Murray (1938), were intended to insure complete coverage of a plot (McClelland *et al.* 1953).

The questions, instructions to the students and a description of the pictures is given in Appendix A.

The writer suggests that there is a scoring bias favoring the above average ability high school student when a protocol is scored

for n Achievement. This point will be further elaborated in the presentation of the findings of this study.

Edwards Personal Preference Schedule. Only one form of the EPPS is available which was administered as suggested in the Edwards Personal Preference Schedule Manual (1959, p. 6).

Administration of Need for Achievement Tests

A male and a female examiner were present when the tests were administered. The TAT and the EPPS were administered, in that order, according to the instructions set forth in the respective manuals.

The students appeared to respond favorably to the testing program. All test questions were answered by all of the students. An atmosphere of interest and cooperation prevailed.

Test Scores Used but Tests were Administered Under the Direction of the Department of Education

School and College Ability Tests (SCAT). The SCAT series was designed to aid in estimating the capacity of a student to undertake the next higher level of learning. It was constructed to assess "school learned abilities", such as reading skills and proficiencies in arithmetic computation and problem solving. Supposedly, then, the SCAT is more a measure of skill or proficiency rather than a measure of aptitude or capacity to learn. Perhaps the "developed abilities" are over stated in reference to the SCAT in an attempt to avoid the problems of over emphasis on the innate basis of intelligence at the expense of cultural contributions.

The SCAT yields a verbal, quantitative, and total score. The total score was used, in this study, as a measure of academic ability.

Grade Nine Achievement Examinations. Mathematics, Social Studies, Science, Literature, and Language examinations, prepared by an examination committee, are administered to all grade nine students in the Province of Alberta. This provides a basis upon which to judge promotion or failure. All raw scores from the tests are added together to obtain an aggregate score.

The aggregate raw score was used as a basis to classify students on academic achievement.

Normalized Standard Scores

Early investigators thought it a natural law that abilities are normally distributed. It is now realized that such a statement is meaningless, since the shape of the distribution depends on the scale of measurement. The use of normal curves in test scaling is therefore merely a convenience and is not based on any normal distribution of behavior in nature.

Standard scores (nonnormalized) were not used because the distributions were skewed and thus difficult to interpret. In general, Anastasi (1961) argues for the use of standard scores but conceded that "although normalized standard scores are the most satisfactory type of score for the majority of purposes, there are nevertheless certain technical objections to normalizing all distributions routinely."

Scores are somewhat easier to interpret if all tests are

reduced to a scale having a known distribution. For this reason, the writer employed normalized standard scores in the analysis of the data. One should however bear in mind that such scores indicate only the relationship of the individual to the peer group. The scores indicate nothing about the general level of achievement motivation compared to other reported distributions. The use of normalized standard scores is acceptable if "the groups are of similar size and the distribution of extreme scores is similar in both distributions" (Gulliksen, 1950). Since these conditions have been met, the writer considers the procedure used in analysis of the data to be statistically justified.

Statistical Tests and Formulae

The majority of descriptive statistics were calculated on the IBM 7040 computer. A correlation computer program, available through the Division of Educational Psychology, was used.

Statistical Analysis in Psychology and Education (Ferguson, 1959) was used as the main reference for statistical formulae and accompanying tables. Differences between means, correlated and independent observations, were tested by "t" tests suggested by Ferguson (1959, pp. 136-140). The procedure given by Winer (1962, pp. 36-39) was used in testing differences between means when the sample variances were not equal.

The .05 level of confidence was accepted as the boundary between significance and non-significance.

Interjudge Scoring Reliability

Prior to the scoring of the research protocols, the writer practiced scoring the precoded protocols prepared by Atkinson (1958). When the scoring was in agreement with Atkinson, which was equal to or greater than a Spearman rho of .90, the stories in this study were scored for n Achievement.

The stories written by the male subjects were independently scored by another graduate student trained in the McClelland technique of scoring TAT protocols. The Spearman rho rank order correlation calculated for the two sets of scores was .91. A discussion with the graduate student regarding differences between the two sets of scores for an individual revealed that interpretation of instructions in the manual were not applied exactly the same by the two scorers. The agreement in scoring was sufficiently high to warrant drawing conclusions from the "interpreted" data since the inter-scorer reliability was at the median of reported inter-scorer reliabilities and falls above the .90 level suggested by Gulliksen (1950) to be the lowest desired minimum.

CHAPTER V

RESULTS OF THE STUDY

The raw score data, i.e. EPPS and TAT need for achievement scores, academic achievement and aptitude scores, and a deviation score, are tabulated in Appendix B. TAT n Achievement scores have a constant of 4 added to each score so that the lowest score now has a value of 1. Academic underachieving and overachieving students are identified by the deviation score.

A scatter diagram of the need for achievement raw scores is presented in Figure I and Figure II for males and females respectively. Since a curvilinear relationship is not apparent, it will be assumed that the linear-regression model is a good fit to the data.

The need for achievement, and academic achievement and aptitude scores were transformed to normalized standard scores with a mean of 50 and a standard deviation of 10.

Normalized scores were calculated on the combined male and female data which were used to compare male and female need for achievement scores. When academic aptitude and achievement scores are later discussed, reference is to the normalized combined sample data. Descriptive data are presented in Table IV.

The male and female samples were normalized separately. Summary data are presented in Table V. Comparisons were made between the need for achievement scores of the subgroups within each sample.

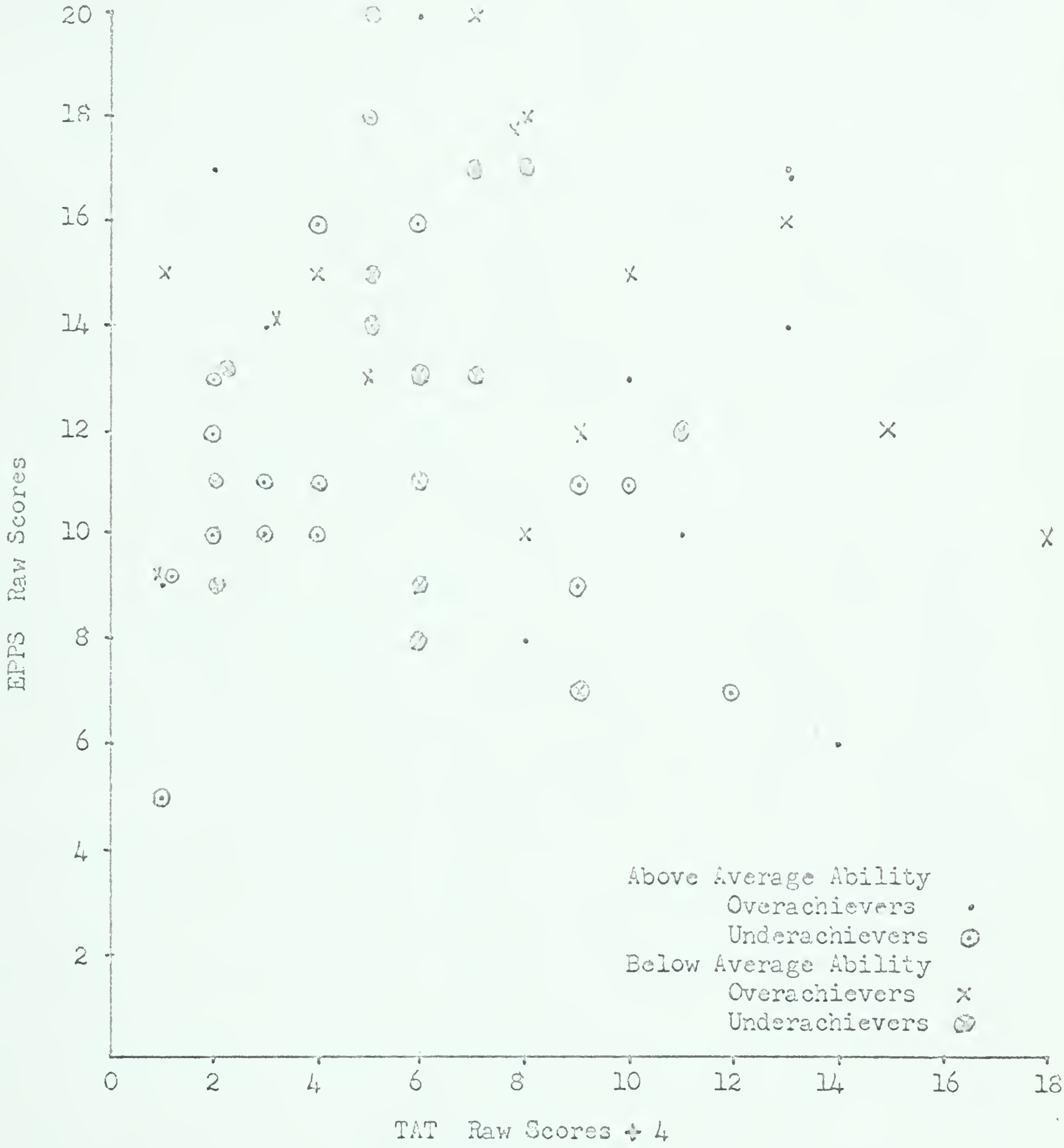

Figure 1. Scatter Diagram of Male Need For Achievement Raw Scores

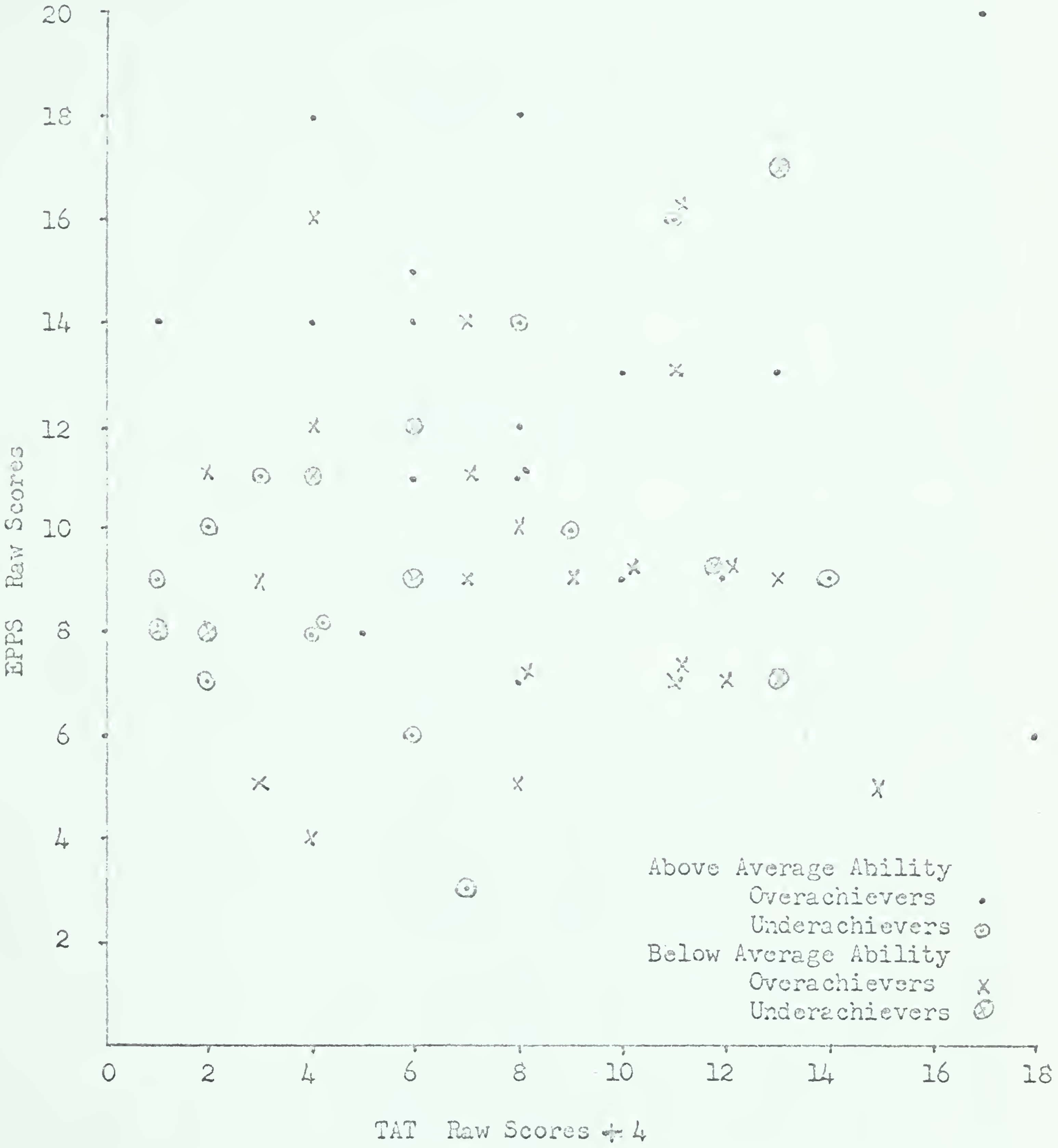

Figure 2. Scatter Diagram of Female Need For Achievement Raw Scores

TABLE IV

DESCRIPTIVE DATA FOR SAMPLES WITH COMBINED MALE AND FEMALE NORMALIZED STANDARD SCORES

		N	EPPS		TAT		
			$\bar{X}$	S^2	$\bar{X}$	S^2	r
Male	Above Average Ability Overachievers	11	53.97	108.78	52.96	122.99	-.09
	" " " Underachievers	16	49.66	64.48	44.62	68.40	.10
	Below Average Ability Overachievers	14	56.85	49.42	51.43	136.67	-.09
	" " " Underachievers	15	52.92	72.42	47.50	32.60	.01
	Above Average Ability	27	51.42	87.05	48.02	107.54	.08
	Below Average Ability	29	54.82	65.12	49.40	86.68	.01
	Overachievers	25	55.58	77.44	52.10	131.33	-.10
	Underachievers	31	51.24	71.06	46.01	53.14	.10
Female	Above Average Ability Overachievers	18	52.44	88.17	53.03	90.82	-.19
	" " " Underachievers	12	44.11	85.38	47.35	87.05	.20
	Below Average Ability Overachievers	22	44.22	81.00	52.66	60.06	-.14
	" " " Underachievers	8	46.75	55.65	49.63	120.56	.33
	Above Average Ability	30	49.11	103.63	50.76	97.02	.08
	Below Average Ability	30	44.90	75.52	51.85	77.97	-.02
	Overachievers	40	47.92	101.00	52.82	73.96	-.14
	Underachievers	20	45.17	75.17	48.26	101.81	.26
Male		56	53.18	78.50	48.73	97.23	.06
Female		60	47.00	94.09	51.30	87.80	.02

TABLE V

DESCRIPTIVE DATA FOR SAMPLES WITH SEPARATE MALE AND FEMALE NORMALIZED STANDARD SCORES

		N	EPPS		TAT		
			$\bar{X}$	S^2	$\bar{X}$	S^2	r
Male	Above Average Ability Overachievers	11	50.85	128.37	54.12	115.13	-.08
	" " " Underachievers	16	46.08	79.21	46.06	67.24	.12
	Below Average Ability Overachievers	14	53.99	60.06	52.62	130.42	-.07
	" " " Underachievers	15	49.72	87.24	49.05	32.15	.01
	Above Average Ability	27	48.02	104.86	49.34	102.41	.10
	Below Average Ability	29	51.78	78.68	50.77	82.81	.01
	Overachievers	25	52.61	92.54	53.28	124.10	-.08
	Underachievers	31	47.84	86.30	47.51	52.42	.11
Female	Above Average Ability Overachievers	18	55.38	87.42	51.89	97.81	-.20
	" " " Underachievers	12	47.14	90.25	45.90	92.54	.20
	Below Average Ability Overachievers	22	47.24	85.19	51.36	65.45	-.14
	" " " Underachievers	8	49.86	56.70	48.47	131.79	.32
	Above Average Ability	30	52.08	104.86	49.49	104.45	.08
	Below Average Ability	30	47.93	78.85	50.59	84.82	-.02
	Overachievers	40	50.90	102.62	51.60	80.10	-.14
	Underachievers	20	48.23	78.68	46.93	109.83	.26
Male		56	49.97	94.67	50.09	92.74	.07
Female		60	50.01	96.24	50.04	94.87	.02

The results of this study are in general agreement with previous research. Male subjects scored higher ($p < .005$) than females on the need for achievement scale of the EPPS, females scored higher ($p=.08$) on the TAT n Achievement scale than males (Table VI), and the correlations (Table IV) calculated between the EPPS and TAT scores were nonsignificant (males, $r = .06$; females, $r = .02$).

The following statements are applicable for the male and female samples. There were no significant differences in academic ability between overachievers and underachievers (Table VII). The above average ability groups differed significantly on level of academic aptitude (Table VIII). Thus, the overachiever-underachiever classification is distinct from the above average ability-below average ability dichotomy. If the regression phenomenon were operating, one would expect below average ability students to be overachievers and conversely above average ability students to be underachievers. In the present study high achievers, an academic achievement score greater than one standard deviation above the mean, tended, in general, to be overachievers and the converse was true for low achievers who were, in general, underachievers. This may partly be explained by the fact that the maximum SCAT score (1.96) was less than two standard deviations above the mean whereas the maximum aggregate academic achievement score, unlike the maximum SCAT score was not achieved by any student. Overachievers and above average ability students scored higher than, respectively, underachievers and below average ability students on academic achievement (Tables IX and X). Descriptive data of academic aptitude and achievement scores for all

TABLE VI

TESTS OF SIGNIFICANCE FOR DIFFERENCES BETWEEN MALE AND FEMALE NEED FOR ACHIEVEMENT SCORES

	Male		Female				
	N	$\bar{X}_1$	N	$\bar{X}_2$	t_{obs}	$t_{.95}$	p of t_{obs}
EPPS	56	53.18	60	48.73	3.519	1.657	$p < .01$
TAT	56	47.00	60	51.30	1.414	1.657	$.05 < p < .10$

TABLE VII

SIGNIFICANCE OF DIFFERENCES BETWEEN OVERACHIEVER AND UNDERACHIEVER APTITUDE SCORES

		Overachiever	Underachiever			
	N	$\bar{X}_1$	$\bar{X}_2$	t_{obs}	$t_{.95}$	p of t_{obs}
Male	56	50.86	51.32	0.181	2.021	$.80 < p < .90$
Female	60	48.72	49.41	0.288	2.000	$.70 < p < .80$

TABLE VIII

SIGNIFICANCE OF DIFFERENCES BETWEEN ABOVE AND BELOW AVERAGE ABILITY STUDENTS' APTITUDE SCORES

		Above Average Ability	Below Average Ability			
	N	$\bar{X}_1$	$\bar{X}_2$	t_{obs}	$t_{.95}$	p of t_{56s}
Male	56	58.40	44.34	9.468	1.675	$p < .01$
Female	60	57.78	40.13	11.164	1.672	$p < .01$

TABLE IX

SIGNIFICANCE OF DIFFERENCES BETWEEN OVERACHIEVER AND UNDERACHIEVER ACADEMIC ACHIEVEMENT SCORES

		Overachiever	Underachiever			
	N	$\bar{X}_1$	$\bar{X}_2$	tobs	t.95	p of tobs
Male	56	56.63	43.78	6.991	2.042	$p < .01$
Female	60	54.26	42.85	5.256	2.036	$p < .01$

TABLE X

SIGNIFICANCE OF DIFFERENCES BETWEEN ABOVE AND BELOW AVERAGE ABILITY STUDENTS' ACADEMIC ACHIEVEMENT SCORES

		Above Average Ability	Below Average Ability			
	N	$\bar{X}_1$	$\bar{X}_2$	t_{obs}	$t_{.95}$	p of t_{obs}
Male	56	53.98	45.36	3.915	1.675	$p < .01$
Female	60	55.95	44.96	4.661	1.672	$p < .01$

sub-groups are presented in Table XI.

The matrix of score intercorrelations are shown in Tables XII and XIII, for males and females respectively, using the combined normalized standard scores. Tables XIV and XV, for males and females respectively, are based upon standard scores normalized for males and females separetely. Academic ability does not, in general, correlate with level of need for achievement in this study for males or females except for a low positive relationship on the EPPS for females.

Each of the hypotheses stated was tested. They are presented separately below.

Hypothesis I

The hypothesis, that underachievers will score higher on the n Achievement scale of the TAT than overachievers, was tested by a one-tail "t" test. Relevant data are shown in Table XVI.

The differences are significant for both males and females but in the opposite direction of the prediction. Overachievers scored higher than underachievers on achievement motivation (TAT) and also on academic achievement, but did not differ on level of academic aptitude.

If the theory presented in this study is accepted it may be concluded that, for this group, personal need for achievement, as measured by the TAT, is channeled into an academic achievement frame of reference. The overachievers were not a more able group. Their high achievement seems to be a function of their high personal need for achievement.

TABLE XI

DESCRIPTIVE ACADEMIC ABILITY AND ACHIEVEMENT DATA FOR SAMPLES BASED ON COMBINED MALE AND FEMALE NORMALIZED STANDARD SCORES

		N	Academic Achievement		Academic Ability		r
			$\bar{X}$	S	$\bar{X}$	S	
Male	Above Average Ability Overachievers	11	63.23	5.40	61.54	7.19	.91 *
	" " " Underachievers	16	47.63	3.22	56.24	4.04	.39
	Below Average Ability Overachievers	14	51.46	4.88	42.47	5.50	.85 *
	" " " Underachievers	15	39.66	4.27	46.08	3.09	.72 *
	Above Average Ability	27	53.98	8.76	58.40	6.13	.70 *
	Below Average Ability	29	45.36	7.46	44.34	4.78	.15
	Overachievers	25	56.63	7.76	50.86	11.37	.95 *
	Underachievers	31	43.78	5.48	51.32	6.23	.80 *
Female	Above Average Ability Overachievers	18	62.11	4.59	60.56	5.22	.87 *
	" " " Underachievers	12	46.72	3.11	53.61	3.44	.84 *
	Below Average Avility Overachievers	22	47.84	8.83	39.04	6.82	.92 *
	" " " Underachievers	8	37.03	6.04	43.12	3.43	.86 *
	Above Average Ability	30	55.95	8.56	57.78	5.72	.85 *
	Below Average Ability	30	44.96	9.47	40.13	6.36	.61 *
	Overachievers	40	54.26	10.14	48.72	12.35	.93 *
	Underachievers	20	42.85	6.55	49.41	6.18	.91 *
Male		56	49.52	9.19	51.12	8.90	.62 *
Female		60	50.46	10.57	48.95	10.70	.78 *

* Significant at the .05 level for a one-tail test.

TABLE XII

CORRELATIONS BETWEEN STUDY VARIABLES FOR MALES WITH SCORES NORMALIZED ON THE COMBINED SAMPLES

	EPPS	TAT	Performance
TAT	.06		
Performance	.08	.27	
Ability	-.05	.04	.62

TABLE XIII

CORRELATIONS BETWEEN STUDY VARIABLES FOR FEMALES WITH SCORES NORMALIZED ON THE COMBINED SAMPLES

	EPPS	TAT	Performance
TAT	.02		
Performance	.25	.19	
Ability	.27	.05	.78

TABLE XIV

CORRELATIONS BETWEEN STUDY VARIABLES FOR MALES WITH SCORES NORMALIZED ON THE MALE SAMPLE

	EPPS	TAT	Performance
TAT	.07		
Performance	.06	.24	
Ability	-.06	.02	.59

TABLE XV

CORRELATIONS BETWEEN STUDY VARIABLES FOR FEMALES WITH SCORES NORMALIZED ON THE FEMALE SAMPLE

	EPPS	TAT	Performance
TAT	.02		
Performance	.23	.18	
Ability	.26	.05	.79

TABLE XVI

SIGNIFICANCE OF DIFFERENCES BETWEEN TAT AND EPPS NEED FOR ACHIEVEMENT SCORES FOR OVERACHIEVERS AND UNDERACHIEVERS

		Overachievers		Underachievers				
		N	$\bar{X}$	N	$\bar{X}$	t_{obs}	$t_{.95}$	Significance
Male	TAT	25	53.28	31	47.51	-2.298	1.675	Significant
	EPPS	25	52.61	31	47.84	1.850	1.675	Significant
Female	TAT	40	51.60	20	46.93	-1.767	1.672	Significant
	EPPS	40	50.90	20	48.23	0.985	1.672	N.S.

TABLE XVII

SIGNIFICANCE OF DIFFERENCES BETWEEN TAT AND EPPS NEED FOR ACHIEVEMENT SCORES FOR ABOVE AVERAGE ABILITY UNDERACHIEVERS AND OVERACHIEVERS

			TAT	EPPS			
		N	$\bar{X}$	$\bar{X}$	t_{obs}	$t_{.95}$	Significance
Male	Underachievers	16	46.06	46.08	-0.007	1.746	N.S.
	Overachievers	11	54.12	50.85	-0.638	1.796	N.S.
Female	Underachievers	12	45.90	47.14	-0.340	1.782	N.S.
	Overachievers	18	51.89	55.38	0.965	1.734	N.S.

Hypothesis 2

The hypothesis, that need for achievement scores will be higher on the TAT than the EPPS for subjects from an above average ability underachiever group, was tested by a one-tail "t" test. The findings are shown in Table XVII.

Differences between the TAT and EPPS need for achievement scores were not significant for males or females. The need for achievement scores are uniformly low which provides evidence to substantiate the conclusion that the TAT and EPPS scales provide a measure of academic achievement motivation since underachievers scored low on both academic motivation tests and achievement measures. The results of hypotheses 1 and 3 support this conclusion.

Hypothesis 3

The hypothesis, that overachievers will score higher than underachievers on the need for achievement scale of the EPPS was tested by a one-tail "t" test. Table XVI contains the data.

As predicted, male overachievers scored higher than underachievers on the EPPS but the difference was not significant for the female sample. It was concluded in the review of research that for most women the eliciting condition is social acceptability whereas for men a situation invoking challenges to leadership and intelligence is dominant while social acceptability is not. The conclusion drawn from the results of this study is that the EPPS is an appropriate instrument to measure social need for achievement which is manifested in academic achievement for males but not for females.

The EPPS and TAT scales seem to provide a measure of social and personal need for achievement that correlates with academic competence for males. For the females, social need for achievement does not manifest itself in academic achievement.

Thus, for females, being an overachiever meets a personal need whereas for males it is a fulfillment of both personal and social need for achievement.

Hypothesis 4

The hypothesis, that need for achievement scores will be higher on the EPPS than on the TAT for subjects from an above average ability overachiever group, was tested by a one-tail "t" test. The findings are shown in Table XVII.

Differences between the EPPS and TAT need for achievement scores were not significant for males or females. Overachievers scored higher on both the need for achievement tests than underachievers.

If the suggestion, that the scales are measures of academic need for achievement, is accepted, and reference is made to the academic achievement orientation of the Alberta society, the results, in general, support conclusions drawn in the presentation of previous hypotheses.

Hypothesis 5

The hypothesis, that below average ability students will score higher on the EPPS need for achievement scale than above average ability students, was tested by a one-tail "t" test. Relevant data are shown in Table XVIII.

TABLE XVIII

SIGNIFICANCE OF DIFFERENCES BETWEEN NEED FOR ACHIEVEMENT SCORES FOR ABOVE AND BELOW AVERAGE ABILITY STUDENTS

		Above Average Ability		Below Average Ability				
		N	$\overline{X}$	N	$\overline{X}$	t_{obs}	$t_{.95}$	Significance
Male	TAT	27	49.34	29	50.77	0.556	1.675	N.S.
	EPPS	27	48.02	29	51.78	1.451	1.675	N.S.
Female	TAT	30	49.49	30	50.59	0.438	1.672	N.S.
	EPPS	30	52.08	30	47.93	-1.680	1.672	Significant

TABLE XIX

SIGNIFICANCE OF DIFFERENCES BETWEEN TAT AND EPPS NEED FOR ACHIEVEMENT SCORES FOR BELOW AVERAGE ABILITY UNDERACHIEVERS AND OVERACHIEVERS

			TAT	EPPS			
		N	$\overline{X}$	$\overline{X}$	t_{obs}	$t_{.95}$	Significance
Male	Underachievers	15	49.05	49.72	0.230	1.753	N.S.
	Overachievers	14	52.62	53.99	0.347	1.761	N.S.
Female	Underachievers	8	48.47	49.86	0.319	1.860	N.S.
	Overachievers	22	51.36	47.24	1.441	1.717	N.S.

The difference between scores for the males approached significance, although it was not significant, in the predicted direction whereas the difference between above and below average ability females, on EPPS need for achievement scores, was significant in the opposite direction to the prediction.

Conclusions drawn previously in explaining the results of hypothesis 3 are applicable here also. It was suggested that subjects will, if they are classified as below average ability, tend to give socially approved EPPS responses. Thus, below average ability males, it is suggested, gave some socially desirable responses, more so than above average ability males for the purpose of presenting a good "front", which were related to references of leadership and intelligence. They subsequently scored higher on the EPPS need for achievement test than the above average ability males.

Below average ability females, on the other hand, also tended to select their responses, it is assumed, in a socially desirable manner. This would be in situations involving social acceptability. Thus, below average ability females would tend to decrease their scores by removing themselves from the leadership and intelligence frame of reference, as measured by the EPPS, to those involving social situations which would decrease their EPPS need for achievement score.

Hypothesis 6

The hypothesis, that below average ability students will score higher on the need for achievement scale of the TAT than above

average ability students, was tested by a one-tail "t" test. The findings are shown in Table XVIII.

Differences between the TAT scores were not significant for males or females. Since many below average ability students with low achievement motivation will have dropped-out of school, it seems reasonable to expect that the select group remaining in school would have a high level of achievement motivation.

Although the writer accepts the position that a below average ability and an above average ability person may have the same level of motivation when attempting tasks of different difficulty levels, this will not be apparent in the observed TAT n Achievement score. It is suggested that there is a scoring bias which favors the above average ability student. The likely reason for this is that, in general, with decreasing academic ability a person has a smaller vocabulary and less command of written language to express himself accurately. Since the scoring method is based upon an analysis of what has been written, the below average ability subject, in all probability, will receive a lower score than a person of above average academic ability although it is possible that they have the same level of academic achievement motivation.

Hypothesis 7

The hypothesis, that there will be no significant differences between the EPPS and TAT need for achievement scores for subjects from a below average ability underachieving group, was tested by a two-tail "t" test. The data are shown in Table XIX.

Differences between the EPPS and TAT need for achievement scores were not significant for males or females. All scores are lower than expected on the basis of the theory presented in this study. However, an explanation of why the TAT score is low is given in the preceeding hypothesis presentation.

If the EPPS is regarded as a scale to measure academic need for achievement and underachievers are assumed to be disinterested in academic activities, it follows that they will have low scores on the EPPS. It was suggested that below average ability students would have a higher level of achievement motivation than above average ability students. Below average ability male and female underachievers scored higher on the EPPS and TAT than the corresponding above average ability group, as concluded, but this was not true, in general, for the overachiever group. Perhaps academic ability in one instance and level of achievement motivation in the other were the determining factors related to school attendance.

Hypothesis 8

The hypothesis, that there will be no significant differences between the EPPS and TAT need for achievement scores for students from a below average ability overachieving group, was tested by a two-tail "t" test. The findings are shown in Table XIX.

Differences between the EPPS and TAT need for achievement scores were not significant for males or females. Nor were differences, for males and females, between the overachieving above and below average ability students significant. An explanation accounting

for the high EPPS score for males and low EPPS score for females from the below average ability overachieving groups, as compared to the above average ability overachieving groups, is given in the presentation of the analysis of results for hypothesis 5.

Comment

Although all hypotheses were not confirmed in the analysis of the results, explanations, derived in large part from the presented theory of this study, are presented in the following chapter.

CHAPTER VI

SUMMARY AND IMPLICATIONS

This chapter presents a summary of the findings in this study which is used as a basis, along with the results in the last chapter, to revise the postulates from which the hypotheses were derived. A need to reformulate the theory of this study is evident on the basis of sex differences and the apparent emphasis given, in Alberta, to academic achievement. In addition, special problems for future research, together with implications for educational and psychological theory and educational practice will be discussed,

Evaluation of Postulates

Each of the postulates in chapter IV is presented below together with an evaluation of it in terms of the findings in this study.

Postulate I

> Persons with high v Achievement scores, as measured by the EPPS, are more susceptible to environmental expectations which for most high school students includes acceptable marks. Therefore high v Achievers will not be underachievers. While overachievers will not necessarily score high on the EPPS need for achievement scale, underachievers will have low scores.

Although postulate I follows from previous research, it was not formally tested with hypotheses derived from it. A general statement regarding environmental expectations was made but this was not related to a specific culture. Postulate III directly relates susceptibility to environmental expectations with the Alberta cultural value system.

Postulate II

> A subject's n Achievement score, as measured by the TAT will correlate with academic marks to the extent that the academic curriculum is coincident with the personal interests of an individual. Thus a person with a high n Achievement score would be an underachiever if the academic activities did not coincide with personal interests. There are some underachievers, who express high achievement motivation in other activities. The TAT scores of underachievers therefore will be higher than or equal to those of overachievers.

Activities in which students may participate and gain personal recognition are somewhat limited in Alberta. One avenue that permeates all social and personal activities is success in academic activities at school. A personal need for achievement may therefore be met by attainment of satisfactory marks in school subjects which is the one common course open to students. Although a personal need is not necessarily coincident with academic need for achievement, expression of the personal need, especially for males,appears to be found in academic achievement in Alberta. For females, personal need for achievement seems to be expressed to a lesser extent in academic achievement. There are presumably alternative channels open to females.

If reference is primarily to the student population in Alberta where areas to express need for achievement is limited, except in academic achievement which is stressed in this culture, overachievers would be expected to score higher than underachievers on the TAT. In contrast with the postulate cited above it seems that personal interests coincide with academic activities, particularly pertaining to males, and the expression of achievement motivation is, in

general, through academic achievement.

Postulate III

> When need for achievement is measured by a v Achievement scale of the EPPS, subjects with high scores are more susceptible to environmental expectations, which for most high school students includes acceptable marks. Since, in Alberta, social need for achievement, a function of social pressure in this society, manifests itself in academic need for achievement, high v Achievers will be overachievers.

Social need for achievement seemed to manifest itself in academic achievement for males but not for females. Thus, for females, being an overachiever meets a personal need but not a social need whereas for males it is a fulfillment of both personal and social need for achievement. Apparently females do not see academic achievement as being socially desirable for themselves. If they try to achieve well, it is a fulfillment of personal needs. Males, on the other hand, seem to be aware of social pressures which is apparent by their conformity to environmental expectations.

Postulate IV

> It is socially acceptable and approved, within the cultural value system of Alberta, to remain in school. Thus below average ability students who are still in school at the high school level, will have a high v Achievement score as measured by the EPPS.

Apparently males who stay in school are aware of social expectations in this regard whereas remaining in school, for females, does not seem to be a function of social expectations for academic achievement. For females, some factor seems to be operating which was not

investigated in this study. Above average ability females, on the other hand score high on the EPPS. It seems likely that for them academic activities meets a personal need.

Postulate V

> Since below average ability students are handicapped by lack of academic ability, compared to above average ability students, and are still in school, it would follow that below average ability students are high n Achievers.

Personal need for achievement scores of males and females as measured by the TAT, were highly similar in that below average ability subjects scored higher than above average ability students but the differences were not significant. It is suggested that personal need for achievement, for males, finds expression in academic activities whereas, for females, a personal need is met through interpersonal relationships.

Additional Findings

There is a general agreement between previous research and the results of this study for sex differences and unrelatedness of EPPS and TAT scores. Male subjects scored higher ($p < .005$) than females on the EPPS whereas females scored higher ($p = .08$) on the TAT than males. Correlations calculated between the EPPS and TAT scores were nonsignificant (males, $r = .06$; females, $r = .02$).

In general, both male and female overachievers scored higher than underachievers on the need for achievement tests. It was suggested in postulate IV that below average ability students are handicapped by lack of academic ability in comparison with above

average ability students, and therefore the below average ability subjects, who remain in school, have high achievement motivation. Although male and female below average ability students generally scored higher on the achievement motivation tests than above average ability students, the difference was not statistically significant.

There appear to be different expectations involved in achievement motivation for males and females in the Alberta cultural value system. The Achievement motivation seems to be elicited by social situations for females where interpersonal relationships are given prominence over personal activities. For males situations invoking personal challenges to leadership and intelligence are dominant while social situations are not. One exception to the above general statements is that social acceptance may manifest itself by means of intellectual pursuits for above average ability females who are competing in a predominantly male academic setting.

Social need for achievement, as measured by the EPPS for males, is manifested in academic achievement whereas for females social need for achievement, in general, does not manifest itself in academic achievement. A high personal need for achievement, as measured by the TAT for males and females, may or may not be channeled into academic achievement.

Personal need for achievement, for males and females as measured by the TAT, appears to be channeled into an academic achievement frame of reference. In this study overachievers were not a more able group. Their high academic achievement seems to be a function of their high personal need for achievement. It is

suggested that, for females, being an overachiever meets a personal need whereas for males it is a fulfillment of both personal and social need for achievement.

Overview of Theory

Although Edwards and McClelland developed their achievement motivation scales from the same theory, that of Murray (1938), and both subsequently entitled their instruments as need for achievement (n Achievement) tests, research evidence presented in the review of research suggests that these tests do not measure the same hypothetical construct. If these tests are not equivalent measures of n Achievement and inferences from one test cannot be generalized to the other when n Achievement is the resultant variable, what in fact does each instrument measure?

It was suggested in this study that these instruments measure different types of need for achievement. The EPPS was assumed to be a measure of social need for achievement which was designated as v Achievement (value for achievement). Characteristic of persons with high v Achievement scores is that they are more responsive to authoritative opinions as to what constitutes correctness or success and are more conformist. Personal need for achievement, as measured by the TAT, remained as n Achievement (need for achievement). Atributes of persons high on the n Achievement scale is that they tend to be individualistic, unwilling to be pressured into conformity, and are inner-oriented or self-oriented. Murstein (1963) has suggested that perhaps the concept of n Achievement is too global

and reference should be made to a limited area of academic need for achievement. While this notion has merit, it produces unnecessary restrictions that are not involved if one considers the n Achievement and v Achievement scales as including this one limited need.

The postulates derived from the proposed theory were based upon the finding (Andrews,1959; Downey, 1960) that the Alberta value system is largely academically oriented. In contrast, Americans emphasized physical development, citizenship, patriotism, social skills, and family living which are predominantly non-intellectually oriented. Thus, different environmental expectations are involved in Alberta and the United States.

The distinction made between v Achievement and n Achievement in relation to the EPPS and TAT appears to hold. The absence of relationship between the EPPS and TAT measures in this study was explained in terms of personal and social need for achievement. Thus, the proposed theory appears to have some merit.

A limitation in this study, for the purpose of theory building, is that explanations were made on the basis of personal and social need for achievement but no measure of other needs was utilized. If results from other scales were available, much of the speculation would rest on firmer ground.

Implications

Psychological Theory. Further development of the proposed theory, using the concepts of v Achievement and n Achievement, may lead to greater understanding of achievement motivation. Although

considerable research using the EPPS and TAT has been reported, much work is to be done before one can say with any degree of confidence what each instrument measures.

Educational Theory. The findings of this study suggest that a closer look should be taken at the senior high school program that is presently available for females. Many females appear to remain in school for personal reasons, e.g. the opportunity for social contact, but drop-out at the end of grade eleven when academic tasks are becoming to be vary strongly emphasized. For some females, especially those of above average ability, social acceptance may manifest itself by means of intellectual pursuits. On the other hand, however, males appear to be aware of the environmental pressures, encouraging one to continue in school, since situations invoking challenges to leadership and intelligence appear to be dominant while social acceptability is not. In many cases males view education as instrumental rather than offering personal fulfillment.

Educational Practice. Urban middle class males who remain in Alberta schools at the high school level appear to have, in general, accepted the present educational program which seems to meet both their personal and social needs. The Alberta course of studies does not seem to meet either the social or personal needs of females. Many who could successfully complete the present high school curriculum drop out at Grade XI. It is suggested that the current program be expanded with a view to modifying it so that it may meet the needs of females not inclined to predominantly male intellectual pursuits.

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APPENDIX A.

PROCEDURE FOR ADMINISTRATION OF THE TAT

The pictures used for the four stories in this study were B, H, A, and G (standard letters used by McClelland _et al_. (1953) in identifying each picture) in that order. A description of the pictures classified by their identifying letter is as follows:

A. "Father-son". Card 7BM from the Murray Thematic Apperception TEST.

B. Two men (inventors) in a shop working at a machine.

G. Boy with vague operation scene in background. Card 8BM from the Murray Thematic Apperception Test.

H. Boy in checked shirt at a desk, an open text book in front of him.

In recording these stories a separate paragraph was used for the responses to each of the four questions that were asked in order to insure complete coverage of a plot. The four sets of questions were:

1. What is happening? Who are the persons?
2. What has led up to this situation - that is, what has happened in the past?
3. What is being thought - what is wanted? By whom?
4. What will happen? What will be done?

The instructions to the students were as follows:

This is a test of your creative imagination. A number of pictures will be projected on the screen before you. You will have twenty seconds to look at the pictures and then about four minutes to make up a story about it. Notice that there is one page for each picture. The same four questions are asked. They will guide your thinking and enable you to cover all the elements of a plot

in the time alotted. Plan to spend about a minute on each question. I will keep time and tell you when it is time to go on to the next question for each story. You will have a little time to finish each story before the next picture is shown.

Obviously there are no right or wrong answers, so you may feel free to make up any kind of a story about the pictures you choose. Try to make them vivid and dramatic for this is a test of creative imagination. Do not merely describe the picture you see. Tell a story about it. Work as fast as you can in order to finish in time. Make them interesting. Are there any questions? If you need more space for any question, use the reverse side.

The room was then darkened for 20 seconds while the first picture was projected on a screen before the subjects. After 20 seconds the picture was turned off, the lights were turned on and the subjects began writing. The experimenter kept time and after a minute had been allowed for each question, would say, "All right, it is about time to go on to the next question." When the subjects had been writing for 30 seconds on the last question, the experimenter would say, "Try to finish up in 30 seconds." At the end of the final minute he would begin to prepare for the next picture, allowing no more than 15 seconds more than the required time for finishing the stories. The lights would be dimmed and the next picture projected on the screen for 20 seconds, and so on without interruption until all four stories had been written.

APPENDIX B.

RAW DATA (Unscaled)

EPPS, TAT, ACADEMIC ACHIEVEMENT, SCAT, AND DEVIATION SCORES

MALE SAMPLE

N = 56

I.D. NO.	EPPS	TAT*	ACADEMIC ACHIEVEMENT	SCAT	DEVIATION SCORE
1	20	5	221	77	-1.025
2	15	4	355	84	0.500
3	9	6	263	81	-0.651
4	18	8	393	85	0.989
5	15	1	374	74	1.347
6	18	5	277	97	-1.370
7	7	9	251	78	-0.651
8	17	8	286	85	-0.551
9	6	14	405	95	0.586
10	8	8	409	97	0.529
11	13	2	282	86	-0.665
12	16	4	246	94	-1.643
13	11	10	305	94	-0.795
14	9	1	407	91	0.845
15	10	11	395	90	0.730
16	12	15	318	72	0.656
17	10	3	280	87	-0.752
18	20	6	392	91	0.629
19	17	13	454	106	0.658
20	13	10	435	100	0.730
21	12	11	270	81	-0.550
22	16	13	260	59	0.570
23	11	4	272	89	-0.982
24	20	7	398	84	1.118
25	14	13	468	110	0.630
26	12	2	283	87	-0.709
27	13	7	237	76	-0.738
28	14	3	438	103	0.601
29	11	6	218	68	-0.551
30	9	1	333	98	-0.623

MALE SAMPLE

N = 56

I.D. NO.	EPPS	TAT*	ACADEMIC ACHIEVEMENT	SCAT	DEVIATION SCORE
31	14	3	311	70	0.670
32	17	13	407	89	0.960
33	11	9	328	97	-0.637
34	16	6	322	97	-0.723
35	13	2	238	75	-0.666
36	5	1	307	93	-0.709
37	11	3	295	91	-0.767
38	8	6	257	84	0.910
39	13	5	361	84	0.586
40	18	8	303	64	0.901
41	10	18	358	77	0.946
42	17	7	233	77	-0.852
43	12	9	302	62	1.002
44	15	10	358	83	0.600
45	9	9	278	88	-0.838
46	15	5	235	80	-0.997
47	14	5	265	84	-0.795
48	10	8	308	72	0.512
49	7	12	292	86	-0.522
50	10	1	249	56	0.585
51	17	2	419	92	0.961
52	11	2	230	83	-1.241
53	13	6	247	81	-0.881
54	10	4	284	87	-0.694
55	9	2	263	85	-0.882
56	10	2	280	91	-0.982

* A constant of 4 is added to each score.

FEMALE SAMPLE

N = 60

I.D. NO.	EPPS	TAT*	ACADEMIC ACHIEVEMENT	SCAT	DEVIATION SCORE
1	9	6	239	77	-0.766
2	6	6	317	96	-0.737
3	5	15	385	83	0.988
4	10	9	280	87	-0.752
5	10	8	337	76	0.701
6	9	1	297	90	-0.680
7	7	11	213	47	0.585
8	13	11	371	79	1.018
9	15	6	402	94	0.601
10	8	2	246	75	-0.551
11	9	10	446	103	0.716
12	9	12	274	62	0.600
13	16	11	358	78	0.888
14	13	10	443	97	1.018
15	9	12	262	80	-0.608
16	17	13	249	82	-0.910
17	7	2	263	85	-0.882
18	11	7	391	76	1.478
19	3	7	304	93	-0.752
20	12	4	252	55	0.686
21	14	7	250	55	0.657
22	7	8	290	58	1.059
23	10	2	277	85	-0.680
24	8	1	213	68	-0.623
25	9	13	376	82	0.917
26	5	8	210	46	0.599
27	16	4	324	71	0.742
28	18	4	441	102	0.701
29	14	4	396	92	0.630
30	20	17	392	92	0.572

* [illegible]

FEMALE SAMPLE

N = 60

I.D. NO.	EPPS	TAT*	ACADEMIC ACHIEVEMENT	SCAT	DEVIATION SCORE
31	12	6	258	81	-0.722
32	11	6	438	98	0.888
33	7	12	385	75	1.448
34	14	8	285	87	-0.680
35	9	7	234	43	1.117
36	13	13	400	95	0.514
37	8	4	291	87	-0.595
38	7	8	397	94	0.529
39	11	4	209	66	-0.566
40	12	8	381	90	0.529
41	9	14	277	86	-0.737
42	9	10	355	75	1.017
43	11	3	248	85	-1.097
44	7	13	239	74	-0.595
45	16	11	314	96	-0.780
46	11	8	417	98	0.586
47	7	11	372	80	0.974
48	14	6	414	98	0.543
49	9	9	352	80	0.686
50	9	12	418	92	0.946
51	11	8	418	96	0.716
52	6	18	402	87	1.003
53	8	5	457	109	0.530
54	11	2	331	76	0.614
55	14	1	442	98	0.946
56	9	3	213	40	0.988
57	5	3	321	73	0.642
58	8	4	267	87	-0.939
59	4	4	299	62	0.959
60	18	8	387	89	0.672

* A constant of 4 is added to each score.

DESCRIPTIVE RAW SCORE DATA

	MALE		FEMALE		TOTAL	
	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S
EPPS	12.70	3.66	10.32	3.69	11.47	3.86
TAT*	2.57	4.13	3.67	4.11	3.14	4.15

* Range of scores -3 to 14

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